COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF JESAMINE-SOUTH ELKHORN WATER DISTRICT FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT AND FINANCE A WATERWORKS IMPROVEMENTS PROJECT PURSUANT TO KRS 278.020 AND 278.300	))))))	CASE NO. 2012-00470

NOTICE OF FILING

Notice is given to all parties that the following materials have been filed into the record of this proceeding:

- The digital video recordings of the evidentiary hearing conducted March 13 – March 14, 2013 in this proceeding;

- Certifications of the accuracy and correctness of the digital video recordings;

- All exhibits introduced at the evidentiary hearing conducted March 13 – March 14, 2013 in this proceeding;

- The written logs listing, *inter alia*, the date and time of where each witness' testimony begins and ends on the digital video recordings of the evidentiary hearing conducted March 13 – March 14, 2013.

A copy of this Notice, the certifications of the digital video records, exhibit lists, and hearing logs have been served by first class mail upon all persons listed at the end of this Notice. Parties desiring electronic copies of the digital video recordings of the hearing in Windows Media format may download copies at:

http://www.psc.ky.gov/av_broadcast/2012-00470/2012-00470_13Mar13_Inter.asx

http://www.psc.ky.gov/av_broadcast/2012-00470/2012-00470_14Mar13_Inter.asx

Parties wishing annotated digital video recordings may submit a written request by electronic mail to pscfilings@ky.gov. A minimal fee will be assessed for copies of these recordings.

The exhibits introduced at the evidentiary hearing may be downloaded at http://psc.ky.gov/pscscf/2012%20cases/2012-00470/.

Done at Frankfort, Kentucky, this 20th day of March 2013.

Linda Faulkner

Linda Faulkner
Director, Filings Division
Public Service Commission of Kentucky

Honorable W. Randall Jones
Attorney at Law
Rubin & Hays
Kentucky Home Trust Building
450 South Third Street
Louisville, KENTUCKY 40202

Honorable Anthony G Martin
Attorney at Law
P.O. Box 1812
Lexington, KENTUCKY 40588

Bruce E Smith
201 South Main Street
Nicholasville, KENTUCKY 40356

Honorable Robert M Watt, III
Attorney At Law
STOLL KEENON OGDEN PLLC
300 West Vine Street
Suite 2100
Lexington, KENTUCKY 40507-1801

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF JESSAMINE - SOUTH ELKHORN WATER DISTRICT FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT AND FINANCE A WATERWORKS IMPROVEMENTS PROJECT PURSUANT TO KRS 278.020 AND 278.300	)	CASE NO. 2012-00470

CERTIFICATE

I, Sonya Harward, hereby certify that:

1. The attached DVD contains a digital recording of the hearing conducted in the above-styled proceeding on **March 13, 2013**. The hearing was recorded on 2 consecutive days, March 13, 2013 and March 14, 2013. The Hearing Log, Witness List, Exhibits and Exhibit List are included with the recording on March 13, 2013.

2. I am responsible for the preparation of the digital recording;

3. The digital recording accurately and correctly depicts the hearing;

4. The "Hearing Log" attached to this Certificate accurately and correctly states the events that occurred at the hearing of **March 13, 2013** and the time at which each occurred.

5. The Exhibit List attached to this Certificate lists all exhibits introduced at the hearings of **March 13, 2013 and March 14, 2013.**

Given this 19 day of February, 2013.

Sonya Harward

Sonya Harward, Notary Public
State at Large

My commission expires: Aug. 25, 2013

Session Report - Detail

2012-00470_13Mar13

Jessamine-South Elkhorn Water District

Date:	Type:	Location:	Department:
3/13/2013	Other	Public Service Commission	Hearing Room 1 (HR 1)

Judge: Jim Gardner
Witness: John G Horne; Nicholas Strong
Clerk: Sonya Harward

Event Time	Log Event	
9:00:08 AM	Session Started	
9:00:12 AM	Preliminary Remarks-Vice Chair Gardner	
	Note: Harward, Sonya	Preliminary Remarks
9:00:42 AM	Parties Present-Vice Chair Gardner	
	Note: Harward, Sonya	Bruce Smith and Tony Martin, Counsel for JSEWD; Robert Watt and Monica Braun, Counsel for Forest Hills'; Gerald Wuetcher and George Wakim, PSC staff.
9:01:37 AM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	No public notice necessay. Planning and Zoning Commissions were notified. No public or Planning and Zoning Commission present to speak.
9:02:41 AM	Disclosure-Vice Chair Gardner	
	Note: Harward, Sonya	Michael Richie was represented by a company Vice Chair Gardner worked for, but no direct work done with him. (No objections from parties.)
9:03:37 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Commented that decision coming from Commission as a whole even though only being heard by him.
9:04:19 AM	Motion-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Motion for confidential treatment of a map that was submitted to the Commission and an Order is in process and the map will be kept confidential until that ruling.
9:04:56 AM	Motions-Bruce L. Smith-JSEWD	
	Note: Harward, Sonya	Preliminary Motions
9:08:07 AM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Asked to have a data response admitted as part of the record. This was JSEWD's response to #13 to Forest Hills' Requests for Information, dated Dec. 4, 2012.
9:08:48 AM	Response to Motions-Vice Chair Gardner	
	Note: Harward, Sonya	Commented on Motions of JSEWD Counsel.
9:12:13 AM	Opening Statement-Bruce Smith - JSEWD	
	Note: Harward, Sonya	Outlined witnesses and their testimonies and gave a brief overview of their application.
9:16:40 AM	Opening Statement-Robert Watt-Forest Hills' (Intervenor)	
	Note: Harward, Sonya	Gave a brief description of their testimony and their reason for intervening.
9:23:42 AM	Witness Nicholas Strong	
	Note: Harward, Sonya	Chairman of JSEWD - sworn in and began testimony.
9:27:09 AM	Exhibit 1- JSEWD	
	Note: Harward, Sonya	Letter to Barry Mangold from John Horne, dated Nov. 11, 2005 (referred to by Applicant as JSEWD-Strong 1)

9:29:48 AM	Exhibit 2 - JSEWD	
	Note: Harward, Sonya	Agreement with Mr. Mangold that was not executed (referred to by Applicant as JSEWD-Strong 2)
9:35:58 AM	Objection - Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Objection to an assumption by Mr. Strong about what Mr. McMillian was thinking.
9:36:05 AM	Overruled-Vice Chair Gardner	
	Note: Harward, Sonya	Overruled objection and allowed comment.
9:39:23 AM	Exhibit 3- JSEWD	
	Note: Harward, Sonya	2 letters: 1) to William Arvin from Bruce Smith dated Feb. 2, 2011; and 2) to William Arvin from Bruce Smith dated Feb. 24, 2011 (referred to by the Applicant as Strong Group 3)
9:40:44 AM	Exhibit 4- JSEWD	
	Note: Harward, Sonya	Letter to Logan Davis from Bruce Smith dated Mar. 11, 2011 (also called Memorandum of Understanding and referred to by the Applicant as JSEWD-Strong 4)
9:44:16 AM	Exhibit 5 - JSEWD	
	Note: Harward, Sonya	Response to #11 to Forest Hills' Supplemental Request for Information dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Strong 5)
9:46:28 AM	Changed response to objection-Vice Chair Gardner	
	Note: Harward, Sonya	Changed response to Mr. Watt's objection. Will allow the comment in to the extent that Mr. Strong said it.
9:47:30 AM	Cross-Exam of Witness-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Cross-examination of Witness Strong.
9:51:06 AM	Note for Record-Tony Martin - JSEWD	
	Note: Harward, Sonya	The case being referenced was a system development charge on a CPCN and the standards are different and that case has nothing to do with current case.
9:51:46 AM	Exhibit 1- Forest Hills'	
	Note: Harward, Sonya	Letter to Mr. Strong from PSC (M. Burford) dated April 21, 2006 (referred to by Intervenor as IX-1)
9:52:53 AM	Objection-Tony Martin-JSEWD	
	Note: Harward, Sonya	This filing was under different regulations and standards and they are not the same and have no relevenace in this case.
9:53:23 AM	Exhibit 2- Forest Hills'	
	Note: Harward, Sonya	PSC Memo dated May 3, 2006 (referred to by Intervenor as IX-2)
9:56:25 AM	Exhibit 3- Forest Hills'	
	Note: Harward, Sonya	Capital Improvement Program stamp dated Apr. 13, 2006 by PSC (referred to by Intervenor as IX-3)
9:58:38 AM	Objection-Tony Martin - JSEWD	
	Note: Harward, Sonya	The paragraph in the document being referenced is again referencing regulations not involved in this case.
10:02:04 AM	Objection-Tony Martin - JSEWD	
	Note: Harward, Sonya	Objected since there was not a timeframe to the question.
10:06:19 AM	Exhibit 4- Forest Hills'	
	Note: Harward, Sonya	Collection of minutes from JSEWD Board Meetings (referred to by Intervenor as IX-4)
10:23:40 AM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Questions referencing JSEWD Exhibit 4 (referred to by Applicant as JSEWD-Strong 4)
10:34:13 AM	Question-Vice Chair Gardner	
	Note: Harward, Sonya	VC Gardner interjected with a question about JSEWD's sewer service and number of customers.

10:34:38 AM	Exhibit 5- Forest Hills'	
	Note: Harward, Sonya	Response to #33 from Forest Hills' Request for Information dated Dec. 4, 2012 (referred to by Intervenor as IX-5)
10:36:06 AM	Cross-Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Began cross-examination of Witness Strong.
10:39:53 AM	Tony Martin - JSEWD	
	Note: Harward, Sonya	Interjected to clarified a term (average daily usage).
10:44:20 AM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Interjected to say another witness could better respond to PSC Counsel's question.
10:49:56 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Interjected to make sure that contract being discussed is part of the record.
10:51:10 AM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Provided a copy of the contract to Witness Strong to better allow him to answer questions.
10:52:22 AM	break	
10:52:28 AM	Session Paused	
11:06:17 AM	Session Resumed	
11:06:22 AM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Corrected information he gave right before the break about where the contract was filed in the case.
11:07:35 AM	Cross Exam continued-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Continued questioning of Witness Strong, starting with Engineering bid and service questions.
11:12:35 AM	Cross Exam-Vice Chair Gardner	
	Note: Harward, Sonya	Questioned Witness Strong.
11:15:16 AM	Redirect-Bruce Smith - JSEWD	
	Note: Harward, Sonya	Redirect questions for Witness Strong.
11:26:05 AM	Cross-Exam-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Follow-up questions (and a new questions missed during initial cross-examination) for Witness Strong.
11:27:38 AM	Cross Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Follow up questions for Witness Strong.
11:29:56 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked all parties if they would move to admit their exhibits up to this point as part of the case and it was done.
11:31:30 AM	Witness Strong was dismissed	
11:31:33 AM	Witness John Horne	
	Note: Harward, Sonya	President of Horne Engineering, Inc. - sworn in and began testimony
11:32:57 AM	Direct Exam-Bruce Smith - JSEWD	
	Note: Harward, Sonya	Began questioning Witness J. Horne.
11:37:31 AM	Exhibit 6- JSEWD	
	Note: Harward, Sonya	Map (referred to by Applicant as JSEWD-Horne-1)
11:51:49 AM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Questioning continued, speaking about a 50,000 tank going out of service and being put back in service when booster was put into service.
11:57:00 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked a question about "increased hydralics" and what that means.
12:03:46 PM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Questions continued about how district's site search began.
12:10:46 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Interjected to correct case number in question from JSEWD Counsel (referencing CN 2011-00138, Forest Hill's complaint).

12:13:48 PM	Exhibit 7 - JSEWD	
	Note: Harward, Sonya	Response to #22 to Forest Hills' Supplemental Request for Information dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Horne 2)
12:18:30 PM	Exhibit 8 -JSEWD	
	Note: Harward, Sonya	Evaluation of Jessamine-South Elkhorn Water District Water Tank Siting Study dated Jan. 3, 2013, by John Horne (referred to by Applicant as JSEWD-Horne 3)
12:20:24 PM	Exhibit 9- JSEWD	
	Note: Harward, Sonya	Matrix Table - summary of findings of site evaulation (referred to by Applicant as JSEWD-Horne 4)
12:27:17 PM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Questioning continued - discussing the need for a million gallon tank versus a half million gallon tank.
12:28:48 PM	Exhibit 10- JSEWD	
	Note: Harward, Sonya	Water Usage Northwest Area JSEWD August 2001 - July 2012 (referred to by Applicant as JSEWD-Horne 5)
12:31:40 PM	Exhibit 11- JSEWD	
	Note: Harward, Sonya	Response to #10 to Forest Hills' Request for Information, dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Horne 6)
12:37:04 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Interjected a question to get clarification about difference between southern zone and south east area being discussed.
12:42:06 PM	Exhibit 12- JSEWD	
	Note: Harward, Sonya	Chart - Maximum Daily Demand (GPD) 2001 - 2012 (referred to by Applicant as JSEWD-Horne 7)
12:49:12 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Requested a motion for exhibits to be adopted in Horne testimony.
12:50:37 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Discussed the hearing timeline, ending at 5pm today and will continue as long as necessary tomorrow.
12:50:44 PM	Lunch break	
12:50:49 PM	Session Paused	
2:00:37 PM	Session Resumed	
2:00:38 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Resumed hearing.
2:00:40 PM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked for Rebuttal witness to be allowed to leave for the day as he will not get to testify until tomorrow due to time.
2:03:08 PM	Witness John Horne	
	Note: Harward, Sonya	On stand.
2:03:36 PM	Cross-Exam-Robert Watt- Forest Hills'	
	Note: Harward, Sonya	Questioned Witness J. Horne.
2:06:51 PM	Robert Watt - Forest Hills'	
	Note: Harward, Sonya	Questioning about CIP (document previously filed in this case).
2:27:36 PM	Robert Watt - Forest Hills'	
	Note: Harward, Sonya	Questioning continued about what was taken into account when preparing CIP such as decreased use of water and water conservation in other parts of the country compared to JSEWD.
2:33:27 PM	Tony Martin - JSEWD	
	Note: Harward, Sonya	Interjected that it had already been established that no information about KY American was available.
2:37:40 PM	Exhibit 6 - Forest Hills'	
	Note: Harward, Sonya	Recommended Standards For Water Works 2003 Edition (referred to by Intervenor as IX-6)

2:48:39 PM	Exhibit 7 - Forest Hills'	
	Note: Harward, Sonya	Responses to #3, 4, and 5 to Forest Hills' Requests for Information, dated Dec. 4, 2012 (referred to by Intervenor as Exhibit 16)
2:54:31 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Wanted clarification on Witness J. Horne's response because he seemed to be saying two differenct things about the natural environment.
2:59:30 PM	Robert Watt - Forest Hills'l	
	Note: Harward, Sonya	Referring back to previous Exhibit 4 - Forest Hills' - Collection of Board Meeting minutes (referred to by Intervenor as IX-4).
3:00:59 PM	Exhibit 8 - Forest Hills'	
	Note: Harward, Sonya	Diagram of Catnip Hill Pike 1.0MG Elevated Storage Tank and a Boring Location Plan (referred to by Intervenor as IX-7)
3:06:56 PM	Exhibit 9 - Forest Hills' - Removed from record later	
	Note: Harward, Sonya	Response to #13 to Forest Hills' Request for Information, dated Dec. 4, 2012 (returned and not used)
3:08:24 PM	Robert Watt - Forest Hills'	
	Note: Harward, Sonya	Forest Hills' distributed a document marked Exhitbit 8. Before questioning the witness regarding that exhibit, Counsel withdrew that exhibit and provided another document which it also labeled Exhibit 8.
3:09:00 PM	Exhibit 9 - Forest Hills'	
	Note: Harward, Sonya	New Exhibit 9 - Letter to Sue Switzer from Ron Switzer, dated Dec. 4, 2003 (referred to by Intervenor as IX-8)
3:11:19 PM	Objection-Tony Martin - JSEWD	
	Note: Harward, Sonya	Objection to questions about Exhibit since the letter was from Ron Switzer, not Witness J. Horne.
3:13:56 PM	Robert Watt - Forest Hills'	
	Note: Harward, Sonya	Referencing previous Exhibit 8 - JSEWD - Evaluation of JSEWD Water Tank Siting Study (referred to by Applicant as JSEWD-Horne 3).
3:23:58 PM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked to give Witness Horne the Exhibit he is testifying about (Exhibit 5 - JSEWD) (referred to by Applicant as JSEWD-Strong 5)
3:29:08 PM	Robert Watt - Forest Hills'	
	Note: Harward, Sonya	Question about obtaining CPCN before purchasing property.
3:30:04 PM	Tony Martin - JSEWD	
	Note: Harward, Sonya	Interjected that this subject will be argued in the brief as to what the Commission has said in past Orders.
3:30:30 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Informed Witness J. Horne that he did not need to ask his question about Commission regulations.
3:34:50 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Stopped proceeding for short break.
3:34:52 PM	Break	
3:35:04 PM	Session Paused	
3:43:42 PM	Session Resumed	
3:43:46 PM	Session Paused	
3:43:50 PM	Session Resumed	
3:43:56 PM	Session Paused	
3:44:06 PM	Session Resumed	
3:44:10 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Back in session and reminded Witness J. Horne that he was still under oath.

3:44:50 PM	Cross-Exam-Gerald Wuetcher- PSC	
	Note: Harward, Sonya	Questioned Witness J. Horne.
3:46:52 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked if there was an end date on financing issue.
3:49:49 PM	Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Questions concerning what standards the district suggests the PSC use in regards to tank size.
4:00:32 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Interjected to clarify G. Wuetcher's question, asking if there was any discussion about water storage with KY American Water, not just if it was possible for KY American Water to provide storage service.
4:03:08 PM	Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Referencing Exhibit 10 - JSEWD (referred to by Applicant as JSEWD-Horne 5)
4:06:04 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Interjected to claify that the Witness J. Horne meant entire northeastern part of district, not entire district, in his current response.
4:18:46 PM	Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Question about district exercising its right to eminent domain since 1973.
4:23:39 PM	Cross-Exam-Vice Chair Gardner	
	Note: Harward, Sonya	Questioned Witness J. Horne.
4:27:54 PM	Re-Direct-Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked additional questions of Witness J. Horne.
4:38:58 PM	Cross-Exam-Robert Watts - Forest Hills'	
	Note: Harward, Sonya	Additional cross-examination of Witness J. Horne.
4:43:35 PM	Cross-Exam-Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Additional cross-examination of Witness J. Horne.
4:45:38 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Informed Witness J. Horne that PSC Counsel would not answer his question about what is considered ordinary course of business versus needing a CPCN.
4:46:31 PM	Tony Martin - JSEWD	
	Note: Harward, Sonya	Asked about procedures to be followed since there had been questions about PSC regulations, whether annual average days and monthly average day demands are consistant with the PSC regulations. The district plans to argue that all of those factors are compatable and prehaps required and intend to do that in their brief.
4:47:21 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Responded by stating that those procedures are correct and that those subjects were more legal in nature. Nothing precludes utility from putting what they think the standard should be in the brief.
4:47:31 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked for motion for Forest Hills' exhibits to be admitted into record.
4:48:21 PM	Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked if there more question for Witnesses J. Horne or N. Strong.
4:48:43 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Start at 9am and Christopher Horne will be next witness and N. Strong and J. Horne will not need to be here.
4:50:16 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Adjourned for the day.
4:50:24 PM	Session Paused	
8:04:53 AM	Session Ended	

Exhibit List Report

2012-00470_13Mar13

Jessamine-South Elkhorn Water District

Judge: Jim Gardner
Witness: John G Horne (JSEWD); Nicholas Strong (JSEWD)
Clerk: Sonya Harward

Name:	Description:
Exhibit 10-Forest Hills'	Response to #1 to PSC's Request for Information, dated Dec. 4, 2012 (referred to by Intervenor as IX-9)
Exhibit 10-JSEWD	Water Usage Northwest Area August 2001 - July 2012 (referred to by Applicant as JSEWD-Horne 5)
Exhibit 11-Forest Hills'	Telemetry Controls (referred to by Intervenor as IX-10)
Exhibit 11-JSEWD	Response to #10 to Forest Hills' Request for Information, dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Horne 6)
Exhibit 12-Forest Hills'	1st Page of EPS Report, dated Dec. 10, 2012 (referred to by Intervenor as IX-11)
Exhibit 12-JSEWD	Chart - Maximum Daily Demand (GPD) 2001-2012 (referred to by Applicant as JSEWD-Horne 7)
Exhibit 13-Forest Hills'	Page 19 of EPS Report (referred to by Intervenor as IX-12)
Exhibit 13-JSEWD	Qualifications of William Berkley (referred to by Applicant as JSEWD-Berkley 2)
Exhibit 14-Forest Hills'	Following Junction Modes (from EPS Report) (referred to by Intervenor as IX-13)
Exhibit 14-JSEWD	Market Analysis JSEWD Proposed Water Tank Site (referred to by Applicant as JSEWD-Berkley 1)
Exhibit 15-Forest Hills'	Summary of Inflows and Outflows (p. 24) (referred to by Intervenor as IX-14)
Exhibit 16-Forest Hills'	Summary of Inflows and Outflows (pp. 24-412) (referred to by Intervenor as IX-14)
Exhibit 17-Forest Hills'	Tank "A" Usage During EPS (referred to by Intervenor as IX-16)
Exhibit 18-Forest Hills'	Response to #14 to PSC's Request for Information, dated Dec. 4, 2012 (referred to by Intervenor as IX-17)
Exhibit 19-Forest Hills'	Jan. 5, 2011 Letter to JSEWD from William Bates (referred to by Intervenor as Exhibit 1)
Exhibit 1-Forest Hills'	Letter to Mr. Strong from PSC (M. Burford) dated April 21, 2006 (referred to by Intervenor as IX-1)
Exhibit 1-JSEWD	Letter to Barry Mangold from John Horne, dated Nov. 11, 2005 (referred to by Applicant as JSEWD-Strong 1)
Exhibit 1-PSC	May 19, 2011 Letter to Tom Smith from PSC (George Wakim)
Exhibit 20-Forest Hills'	Jan. 5, 2011 Letter to JSEWD from Ronald Brown (referred to by Intervenor as Exhibit 2)
Exhibit 21-Forest Hills'	Witness C. Toleman's Qualifications as an Appraiser (referred to by Intervenor as Exhibit 9)
Exhibit 22-Forest Hills'	Photographs of two water tanks (referred to by Intervenor as Exhibit 10)
Exhibit 23-Forest Hills'	Seven photographs of a water tank (referred to by Intervenor as Exhibit 11)
Exhibit 24-Forest Hills'	Three photographs of water tanks (referred by Intervenor as Exhibit 13)
Exhibit 25-Froest Hills'	Mike Ritchie's qualifications (referred to by Intervenor as Exhibit 14)
Exhibit 26-Forest Hills'	Confidential Exhibit (referred to by Intervenor as Exhibit 15)
Exhibit 2-Forest Hills'	PSC Memo dated May 3, 2006 (referred to by Intervenor as IX-2)
Exhibit 2-JSEWD	Agreement with Mr. Mangold that was not executed (referred to by Applicant as JSEWD-Strong 2)
Exhibit 2-PSC	August 7, 2012 Letter to Tom Smith from PSC (George Wakim)

Exhibit 3-Forest Hills'	Capital Improvement Program, stamp dated Apr. 13, 2006 (referred to by Intervenor as IX-3)
Exhibit 3-JSEWD	2 Letters: 1)To William Arvin from Bruce Smith, dated Feb. 2, 2011; 2) To William Arvin from Bruce Smith, dated Feb. 24, 2011 (referred to by the Applicant as Strong Group 3)
Exhibit 4-Forest Hills'	Collection of minutes from JSEWD Board Meeting (referred to by Intervenor as IX-4)
Exhibit 4-JSEWD	Letter to Logan Davis from Bruce Smith dated Mar. 11, 2011 (also called Memorandum of Understanding and referred to by the Applicant as JSEWD-Strong 4)
Exhibit 5-Forest Hills'	Response to #33 from Forest Hills' Request for Information, dated Dec. 4, 2012 (referred to by Intervenor as IX-5)
Exhibit 5-JSEWD	Response to #11 to Forest Hills' Supplemental Request for Information, dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Strong 5)
Exhibit 6-Forest Hills'	Recommended Standards For Water Works 2003 Edition (referred to by Intervenor as IX-6)
Exhibit 6-JSEWD	Map (referred to by Applicant as JSEWD-Horne 1)
Exhibit 7-Forest Hills'	Responses to #3, 4, and 5 to Forest Hills' Request For Information, dated Dec. 4, 2012 (referred to by Intervenor as Exhibit 16)
Exhibit 7-JSEWD	Response to #22 to Forest Hills' Supplemental Request for Information, dated Dec. 18, 2012 (referred to by Applicant as JSEWD-Horne 2)
Exhibit 8-Forest Hills'	Diagram of Catnip Hill Pike 1.0MG Elevated Storage Tank and a Boring Location Plan (referred to by Intervenor as IX-7)
Exhibit 8-JSEWD	Evaluation of Jessamine-South Elkhorn Water District Water Tank Siting Study, dated Jan. 3, 2013. by John Horne (referred to by Applicant as JSEWD-Horne 3)
Exhibit 9-Forest Hills'	Letter to Sue Switzer from Ron Switzer, dated Dec. 4, 2003 (referred to by Intervenor as IX-8)
Exhibit 9-JSEWD	Matrix Table - summary of findings of site evaluation (referred to by Applicant as JSEWD-Horne 4)

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF JESSAMINE - SOUTH ELKHORN WATER DISTRICT FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY TO CONSTRUCT AND FINANCE A WATERWORKS IMPROVEMENTS PROJECT PURSUANT TO KRS 278.020 AND 278.300	)	CASE NO. 2012-00470

CERTIFICATE

I, Sonya Harward, hereby certify that:

1. The attached DVD contains a digital recording of the hearing conducted in the above-styled proceeding on **March 14, 2013**. The hearing was recorded on 2 consecutive days, March 13, 2013 and March 14, 2013. The Hearing Log, Witness List, Exhibits and Exhibit List are included with the recording on March 14, 2013.

2. I am responsible for the preparation of the digital recording;

3. The digital recording accurately and correctly depicts the hearing;

4. The "Hearing Log" attached to this Certificate accurately and correctly states the events that occurred at the hearing of **March 14, 2013** and the time at which each occurred.

5. The Exhibit List attached to this Certificate lists all exhibits introduced at the hearings of **March 13, 2013** and **March 14, 2013.**

Given this 19 day of February, 2013.

Sonya Harward

Sonya Harward, Notary Public
State at Large

My commission expires: Aug. 25, 2013

Date:	Type:	Location:	Department:
3/14/2013	Other	Public Service Commission	Hearing Room 1 (HR 1)

Judge: Jim Gardner
Witness: William Bates; Logan Davis; Christopher Horne; Mike Richie; Glenn (Tom) Smith; Clark Toleman
Clerk: Sonya Harward

Event Time	Log Event	
8:59:27 AM	Session Started	
8:59:28 AM	Resumed Hearing - Vice Chair Gardner	
8:59:38 AM	Witness Christopher Horne	
	Note: Harward, Sonya	Sworn in and began testimony. Professional Civil Engineer.
9:03:22 AM	Direct Exam - Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked witness to discuss KY American's water storage and the possibility of JSEWD using their storage.
9:07:08 AM	Cross-Exam-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Questioned Witness Christopher Horne.
9:08:22 AM	Exhibit 10- Forest Hills'	
	Note: Harward, Sonya	Response to #1 to PSC's Request for Information dated Dec. 4, 2012. (referred to by Intervenor as IX-9)
9:11:45 AM	Monica Braun- Forest Hills'	
	Note: Harward, Sonya	Gave Witness C. Horne a copy of a report he performed to look at that was already admitted into the case. (EPS Report)
9:12:18 AM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Interjected about confusion over report being discussed.
9:13:49 AM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Responded to the interjection about the document at question. Witness stated that it was mistakenly suggested to be a third EPS but determined to be an additional copy of the same report.
9:15:44 AM	Exhibit 11 - Forest Hills'	
	Note: Harward, Sonya	Telemetry Controls (referred to by Intervenor as IX-10)
9:17:40 AM	Exhibit 12 - Forest Hills'	
	Note: Harward, Sonya	1st Page of EPS Report (dated Dec. 10, 2012) (referred to by Intervenor as IX-11)
9:20:40 AM	Exhibit 13 - Forest Hills'	
	Note: Harward, Sonya	Page 19 of EPS Report (referred to by Intervenor as IX-12)
9:24:06 AM	Exhibit 14 - Forest Hills'	
	Note: Harward, Sonya	Following Junction Modes (from EPS Report) (referred to by Intervenor as IX-13)
9:26:02 AM	Exhibit 15 - Forest Hills'	
	Note: Harward, Sonya	Summary of Inflows and Outflows (p. 24) (referred to by Intervenor as IX-14)
9:29:50 AM	Exhibit 16 - Forest Hills'	
	Note: Harward, Sonya	Summary of Inflows and Outflows (pp. 24-412) (referred to by Intervenor as IX-15)
9:31:18 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked about location of infomation being discussed.
9:32:57 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked a question of Witness about number he was referring to in his testimony.

9:36:59 AM	Exhibit 17 - Forest Hills'	
	Note: Harward, Sonya	Tank "A" Usage During EPS (referred to by Intervenor as IX-16)
9:39:20 AM	Cross-Exam - Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Questioned Witness C. Horne.
9:40:51 AM	Cross-Exam - Vice Chair Gardner	
	Note: Harward, Sonya	Asked questions of Witness C. Horne.
9:46:01 AM	Redirect - Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked question of Witness C. Horne about conditions and how it effects storage levels.
9:46:52 AM	Cross-Exam - Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Asked additional questions of Witness C. Horne.
9:48:32 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked for Motion to accept Exhibits in C. Horne testimony and it was done and exhibits were accepted.
9:49:18 AM	Witness Glenn (Tom) Smith	
	Note: Harward, Sonya	Sworn in and began testimony. Operator and Superintendent of JSEWD.
9:49:55 AM	Direct Exam -Bruce Smith - JSEWD	
	Note: Harward, Sonya	Direct examination of Witness G. Tom Smith.
9:51:12 AM	Cross-exam- Monica Braun- Forest Hills'	
	Note: Harward, Sonya	Questioned Witness G. Tom Smith.
9:52:36 AM	Exhibit 18 - Forest Hills'	
	Note: Harward, Sonya	Response to #14 to PSC's Request for Information dated Dec. 4, 2012. (referred to by Intervenor as IX-17)
9:59:33 AM	Cross-exam - Gerald Wuetcher - PSC	
	Note: Harward, Sonya	Questioned Witness G. Tom Smith.
10:01:26 AM	Exhibit 1 - PSC	
	Note: Harward, Sonya	May 19, 2011 letter to Tom Smith from PSC (George Wakim)
10:02:03 AM	Exhibit 2 - PSC	
	Note: Harward, Sonya	August 7, 2012 letter to Tom Smith from PSC (George Wakim)
10:03:48 AM	Motion-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Motion to accept Exhibits into the record.
10:04:00 AM	Motion - Monica Braun - Forest Hills'	
	Note: Harward, Sonya	Motion to accept Exhibit into the record.
10:04:10 AM	Cross-Exam - Vice Chair Gardner	
	Note: Harward, Sonya	Questioned Witness G. Tom Smith.
10:10:33 AM	Redirect - Bruce Smith - JSEWD	
	Note: Harward, Sonya	Asked additional questions of Witness G. Tom Smith.
10:11:40 AM	Cross-Exam - Vice Chair Gardner	
	Note: Harward, Sonya	Asked an additional question of Witness G. Tom Smith.
10:12:09 AM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Asked about PSC Exhibit 1 which has 2 blank pages and it was noted by Gerald Wuetcher-PSC Counsel that the blank pages were in error and that the document only consists of the 3 pages with print on them.
10:12:51 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Dismissed Witness G. Tom Smith.
	Note: Harward, Sonya	Asked if this concluded their case, besides the rebuttal witness.
10:13:14 AM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Moved that application be granted and informed that they had no other witnesses.
10:13:36 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked if Forest Hills' was ready to proceed with their witnesses.

10:13:47 AM	Motion-Tony Martin-JSEWD	
	Note: Harward, Sonya	Asked if the Commissin Staff could be asked to provide information about cases that may be known to Commission Staff regarding water tanks.
10:17:19 AM	Response to Motion-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Responded to JSEWD Motion. Does not think JSEWD Counsel is entitled to question the Commission Staff about whether or not they know about other cases.
10:18:07 AM	Response to Motion-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Responded to JSEWD's Motion seeking information. All Commission's Orders since 1980 are on the website and searchable electronically, so the information is readily available. To the extent concerning esthetics, the Commission has considered esthetics in other cases but amount depends on circumstances of case.
10:20:27 AM	Follow Up on Motion-Tony Martin-JSEWD	
	Note: Harward, Sonya	Argued more about request for information he is seeking so that parties can argue the right legal standards to apply to the facts that come forward in the case.
10:21:55 AM	Overruled Motion-Vice Chair Gardner	
	Note: Harward, Sonya	Overruled JSEWD Motion, does not want to require Commission Staff to have to provide information to parties that they can seek on their own and stated that there is no intention to hide information.
10:23:34 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked if Forest Hills' was ready to proceed after a short break.
10:23:45 AM	Break	
10:23:52 AM	Session Paused	
10:33:56 AM	Session Resumed	
10:33:57 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Called back to session and asked Forest Hills' Counsel to begin with their first witness.
10:34:05 AM	Witness William Bates	
	Note: Harward, Sonya	Sworn in and began testimony. Resident of Forest Hills' and President of Forest Hills' Resident Assoc.
10:34:42 AM	Direct Exam-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Questioned Witness W. Bates.
10:46:13 AM	Exhibit 19 - Forest Hills'	
	Note: Harward, Sonya	Jan. 5, 2011 Letter to JSEWD from William Bates (referred to by Intervenor as Exhibit 1)
10:46:40 AM	Exhibit 20 - Forest Hills'	
	Note: Harward, Sonya	Jan. 5, 2011 Letter to JSEWD from Ronald Brown (referred to by Intervenor as Exhibit 2)
10:55:23 AM	Cross-Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Asked questions of Witness W. Bates.
11:05:40 AM	Redirect-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Asked additional questions of Witness W. Bates.
11:06:22 AM	Cross-Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Asked questions of Witness W. Bates.
11:07:17 AM	Cross-Exam-Vice Chair Gardner	
	Note: Harward, Sonya	Asked a question of Witness W. Bates.
11:07:34 AM	Witness W. Bates dismissed	
11:08:51 AM	Witness Logan Davis	
	Note: Harward, Sonya	Sworn in and began testimony. Resident of Forest Hills', board member of Forest Hills' Resident Assoc., and builder of some homes in subdivision.

11:18:27 AM	Reference to previous Exhibit 4-JSEWD	
	Note: Harward, Sonya	Monica Braun-Forest Hills' referenced this exhibit. (referred to by Applicant as JSEWD-Strong 4)
11:24:31 AM	Cross-Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Questioned Witness L. Davis.
11:31:29 AM	Cross-Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Questioned Witness L. Davis.
11:32:19 AM	Redirect-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Asked a follow up question.
11:32:38 AM	Cross-Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Asked additional question.
11:33:11 AM	Wintnss L. Davis dismissed	
11:33:19 AM	Witness Clark Toleman	
	Note: Harward, Sonya	Sworn in and began testimony. Real Estate Appraiser.
11:34:19 AM	Exhibit 21-Forest Hills'	
	Note: Harward, Sonya	Witness C. Toleman's Qualifications as an Appraiser (referred to by Intervenor as Exhibit 9)
11:34:33 AM	Direct Exam-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Questioned Witness C. Toleman.
11:44:53 AM	Exhibit 22-Forest Hills'	
	Note: Harward, Sonya	Photographs of 2 water tanks (referred to by Intervenor as Exhibit 10)
11:48:27 AM	Exhibit 23-Forest Hills'	
	Note: Harward, Sonya	7 photographs of a water tank (referred to by Intervenor as Exhibit 11)
11:53:47 AM	Reference to previous Exhibit 8-JSEWD	
	Note: Harward, Sonya	Monica Braun-Forest Hills' questioned Witness C. Toleman (referred to by the Applicant as JSEWD-Horne 3)
11:55:23 AM	Objection-Tony Martin-JSEWD	
	Note: Harward, Sonya	Asked why these comments were not made in response to previous questions in data requests.
11:56:31 AM	Response-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Responded to Tony Martin's objection. Clarified that they provided the information requested.
11:57:16 AM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked to see response to questions that were previously sought in the data request. Robert Watt-Forest Hills' provided a copy for him.
11:58:48 AM	Objection-Tony Martin-JSEWD	
	Note: Harward, Sonya	Also interjected that other information such as pictures were filed Monday but the information about how they were derived was not included.
	Note: Harward, Sonya	Described that he was referring to the response to JSEWD Supplemental Request #3.
11:59:12 AM	Response-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Reiterated that response was consistent with the question.
12:00:08 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked of JSEWD counsel needed addional time to be able to question Mr. Toleman.
12:00:14 PM	Motion-Tony Martin-JSEWD	
	Note: Harward, Sonya	Moved to exclude specific valuation information being discussed in C. Toleman's current testimony.
12:00:54 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Going to take under advisement the Motion. Will make final decision on Motion after lunch.

12:02:38 PM	Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Continued questioning Witness C. Toleman.
12:04:33 PM	Exhibit 24-Forest Hills'	
	Note: Harward, Sonya	3 photographs of water tanks (referred to by Intervenor as Exhibit 13)
12:08:35 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Asked for clarification about what JSEWD counsel was objecting to earlier.
12:08:54 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Explained his previous objection.
12:09:52 PM	Lunch	
12:10:06 PM	Session Paused	
1:15:47 PM	Session Resumed	
1:15:51 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Asked parties to move for exhibits to be entered into the record, it was done, and the motion was granted.
1:16:26 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Asked about the missing exhibit that would have been labeled as Exhibit 12 by Forest Hills' (though never presented as an exhibit). Asked that the entire response be incorporated by reference.
1:16:45 PM	Response - Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Response about the lack of what Forest Hills' would have called Exhibit 12. Explained that the Exhibit showed that the Cox Street tank was 1 million gallons and this information was found elsewhere so this Exhibit was not needed.
1:18:12 PM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Commented that the Commission incorporate by reference the exhibit being discussed.
1:18:44 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Clarified that there was not an Exhibit 12.
1:19:05 PM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Asked about other Exhibits that the Intervenors did not present.
1:20:41 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Reminded the Vice Chair of the previous objection to what Forest Hills' refers to as Exhibit 10 (in this proceeding, this is Exhibit 22-Forest Hills').
1:20:56 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Restated that he overruled Mr. Martin's objection.
1:21:13 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Asked about what was being incorporated by reference. Clarified that is was the entire response of KY American Water to Commission Staff's first set of interogatories and request for production of documents dated August 3, 2006 in CN 2005-00546.
1:21:36 PM	Overrule of Previous Motion-Vice Chair Gardner	
	Note: Harward, Sonya	Stated that the objections seemed to be that there was a lack of specificity of response to JSEWD supplemental DR #3A. The response was pretty detailed but did not include the 20 percent figure. Decision is to overrule objection because there is no real change in what the response was to the supplement or on the stand.
	Note: Harward, Sonya	Referred back to the objection that was made by Mr. Martin before the break.
1:24:21 PM	Cross-Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Began questioning of Witness C. Toleman
1:39:38 PM	Witness C. Toleman dismissed	

1:40:18 PM	Witness Mike Richie	
	Note: Harward, Sonya	Sworn in and began testimony. Civil Engineer and Photogrammetrist.
1:41:26 PM	Exhibit 25-Forest Hills'	
	Note: Harward, Sonya	Mike Richie's qualifications. (referred to by Intervenor as Exhibit 14)
1:49:36 PM	Exhibit 26-Forest Hills' (Confidential)	
	Note: Harward, Sonya	JSEWD Water Tank Siting Study (confidential) (referred to by Intervenor as Exhibit 15)
1:57:26 PM	Introduction of Confidential Document-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Discussed the document he wanted to have considered as confidential.
1:58:07 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Response to confidential treatment of exhibit due to maps in exhibit.
1:59:27 PM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Until the Commission issues a final ruling, the Exhibit will be kept under seal and kept confidential.
2:01:11 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Stated that no detailed information will be discussed that would make the discussion need to be confidential.
2:01:31 PM	Vice Chair Gardner	
	Note: Harward, Sonya	The Exhibit can be referred to generally with respect to questions.
2:02:09 PM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Clarified how the document will be kept confidential but also how the discussion is not confidential.
2:03:14 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Motion sustained subject to confidentiality provisions.
2:03:28 PM	Objection-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Continuted objection to types of evidence that Forest Hills' continues to present.
2:03:33 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Continued objection acknowledged.
2:03:40 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Resumed questioning Witness M. Richie.
2:15:55 PM	Referenced previous Exhibit 7- Forest Hills'	
	Note: Harward, Sonya	(referred to by Intervenor as Exhibit 16)
2:18:53 PM	Referenced previous Exhbit 8-JSEWD	
	Note: Harward, Sonya	(referred to by Applicant as JSEWD-Horne 3)
2:22:21 PM	Objection-Tony Martin-JSEWD	
	Note: Harward, Sonya	The line of questioning that was about to be started does not remotely appear in the testimony that this witness has provided and should not be answered by this witness.
2:23:16 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Stated that he had not heard question yet.
2:23:30 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Explained what he was going to ask of Witness M. Ritchie.
2:24:15 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Continued objection.
2:24:31 PM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Pointed out for consideration that all were to provide witness lists and summary of their testimony and this question does not seem to fall in what this witness would testify about.

2:25:39 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Agreed with Mr. Wuetcher, but did not know that the witnesses John and Nick Horne would tesitfy that KY American's water tanks were incapable of being used to supplement the water district's storage and found that Mr. Ritchie has the ability to address that subject.
2:26:56 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Stated that he did not ask Mr. Horne on direct examination about the subject.
2:27:07 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Sustained the objection and suggested that questions be asked to establish that Witness Ritchie has expertise in that area.
2:29:00 PM	Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Asked Witness M. Ritchie to give qualifications about his expertise in water tanks.
2:31:59 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Inquired whether JSEWD may cross-examine witness on testimony offerred by avowal without waiving its objection to the introduction of such testimony.
2:32:52 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Not sure how to answer this. Take a break so that JSEWD can decide how they want to proceed.
2:33:48 PM	break	
2:34:00 PM	Session Paused	
2:41:54 PM	Session Resumed	
2:42:03 PM	Vice Chair Gardner	
	Note: Harward, Sonya	JSEWD needs to make a decision whether they would want to ask questions of this witness about subject matter at the end of this witness's direct examination. He will not object.
2:42:59 PM	Tony Martin-JSEWD	
	Note: Harward, Sonya	Will proceed with cross already prepared and likely will not ask questions about subject matter in question at the end of witness's direct examination.
2:43:20 PM	Cross-Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Questioned Witness M. Ritchie.
3:02:26 PM	Cross-Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Questioned Witness M. Ritchie.
3:08:57 PM	Witness M. Ritchie dismissed	
3:09:36 PM	Witness William Berkley	
	Note: Harward, Sonya	Sworn in and began testimony. Real Estate Appraiser and on the Planning Commission for Lexington.
3:10:18 PM	Direct Exam-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Began questioning Witness Berkley.
3:12:56 PM	Exhibit 13-JSEWD	
	Note: Harward, Sonya	Qualifications of William Berkley (referred to by Applicant as JSEWD-Berkley 2)
3:16:22 PM	Exhibit 14-JSEWD	
	Note: Harward, Sonya	Market Analysis JSEWD Proposed Water Tank Site (referred to by Applicant as JSEWD-Berkley 1)
3:38:28 PM	Questioning continued-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Continued questioning Witness W. Berkley about comparison of sales prices of property near current 500,000 gallon water tank in Harrods Ridge.
3:55:43 PM	Questioning continued-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Continued questioning about prices of homes.

4:00:24 PM	Referenced previous Exhibit 22-Forest Hills'	
	Note: Harward, Sonya	Witness W. Berkley referenced exhibit (referred to as Forest Hills' Exhibit 10)
4:01:28 PM	Correction to Report-Witness W. Berkley	
	Note: Harward, Sonya	Made correction to page 15 of report (Exhibit 14-JSEWD, and referred to by Applicant as JSEWD-Berkley 1). It should be 500 kg tank, not 50kg tank.
4:02:08 PM	Motion-Bruce Smith-JSEWD	
	Note: Harward, Sonya	Moved to introduce exhibits into the record.
4:02:42 PM	Motion-Robert Watt-Forest Hills'	
	Note: Harward, Sonya	Moved to admit exhibits previously introduced into the case.
4:03:45 PM	Cross-Exam-Monica Braun-Forest Hills'	
	Note: Harward, Sonya	Began questioning Witness W. Berkley.
4:08:17 PM	Referenced previous Exhibit 23-Forest Hills'	
	Note: Harward, Sonya	Monica Braun referenced previous exhibit (referred to by Intevenor as Exhibit 11)
4:17:10 PM	Cross-Exam-Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Questioned Witness W. Berkley.
4:29:43 PM	Witness W. Berkley dismissed	
4:31:25 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Discussed time frame for Order.
4:31:30 PM	Gerald Wuetcher-PSC	
	Note: Harward, Sonya	Request for information to be provided in seven days for two discussed during the hearing.
	Note: Harward, Sonya	1-Letter from Division of Water
	Note: Harward, Sonya	2-Set of new calculations for financing in terms of rate on money being borrowed.
4:32:26 PM	Bruce Smith-JSEWD	
	Note: Harward, Sonya	Can get DOW letter immediately and the financing will be gotten as quickly as they can.
4:32:36 PM	Vice Chair Gardner	
	Note: Harward, Sonya	Made final comments.
4:32:55 PM	Adjourned	
4:33:01 PM	Session Paused	
7:26:35 PM	Session Ended	

Steven L. Beshear
Governor

Leonard K. Peters
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

David L. Armstrong
Chairman

James W. Gardner
Vice Chairman

Charles R. Borders
Commissioner

May 19, 2011

Tom Smith, Manager
Jessamine-South Elkhorn Water District
802 South Main Street
P.O. Box 731
Nicholasville, KY 40340-0731

Nick Strong, Chairperson
Jessamine-South Elkhorn Water District
802 South Main Street
P.O. Box 731
Nicholasville, KY 40340-0731

PERIODIC REGULATORY COMPLIANCE WATER UTILITY INSPECTION

On May 2, 2011, Commission Staff Member Jimmy Adcock inspected the facilities and records of Jessamine-South Elkhorn Water District. A copy of the report of this inspection is enclosed.

Based on Mr. Adcock's findings, no deficiencies are noted. The previous inspection was conducted on May 12, 2010. One deficiency was noted regarding unaccounted-for water loss. This deficiency appears to be addressed in a satisfactory fashion; however, will remain ongoing until regulatory compliance is achieved.

If you have any questions or wish further assistance, please contact me at (502) 564-3940, extension 409.

George W. Wakim

GEORGE W. WAKIM, P.E., MANAGER
WATER & SEWER BRANCH, ENGINEERING DIVISION

Attachment: JessamineSEWD-050211 Inspection Report
C: Julie Roney, DOW, EEC

PSC EXHIBIT 1

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

UTILITY INSPECTION REPORT

Report Date: 5/6/2011
Report Number: JessamineSEWD-050211

BRIEF

Inspector: Jim R. Adcock

Inspection Date: May 2, 2011

Type of Inspection: Periodic Regulatory Compliance Inspection

Type of Facility: Distribution Facility

Name of Utility: Jessamine-South Elkhorn Water District

Location of Facility: 802 South Main Street, P. O. Box 731, Nicholasville, KY 40340-0731
Attention: Tom Smith, Manager, and Diana Clark, Office Manager

Purpose of Inspection: Periodic inspection of utility facilities operation and maintenance practices to verify compliance with PSC regulations.

Applicable Regulations: KRS 278 and 807 KAR Chapter 5

INSPECTION

Description of Utility: Distribution Facility

Number of Customers: 2,654

Area of Operation: Fayette, Jessamine, and Woodford Counties

Supply Source: Kentucky-American Water Company and City of Nicholasville

Distribution Description: Average daily consumption of 835,536 gallons; 130 miles of distribution line (PVC); total storage capacity of 784,000 gallons

Workforce Summary: 4 full-time employees: 2 office; 2 field

Utility Reps in Insp: Tom Smith, Manager, and Diana Clark, Office Manager

Date of Last Inspection: May 12, 2010

DTR from Last Insp: 1

DTRs not Cleared: 1 ongoing

Summary of items and facilities Inspected:
Records including, but not limited to, pressure charts; meter testing, reading and history; flushing; service interruptions; complaints; facilities inspections and procedures; operation and maintenance manual; facilities maintenance; safety guidelines; a copy of a water shortage response plan; and the service area map, etc.; Park Lane tank (500,000 gal.); Cat Nip tank (50,000 gal.); Sugar Creek tank (110,000 gal.); Pollard tank (110,000 gal.); and Clays Mill Road pump station. During this periodic regulatory compliance inspection, it was not possible to review every record relating to all Commission requirements. Therefore, in some instances the results contained in this report are indicative of those items inspected and reviewed on a sample basis.

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

UTILITY INSPECTION REPORT

Report Date: 5/6/2011
Report Number: JessamineSEWD-050211

FINDINGS

RECOMMENDATIONS

ADDITIONAL INSPECTOR COMMENTS

Water loss for 2009 was 19.05 percent; water loss for 2010 was 15.85 percent. Manager Tom Smith stated that the district has purchased some leak detection equipment, changed out some master meters, and repaired several leaks found in their system last year. Since the district is making efforts to reduce the water loss in their system, the deficiency cited at the last inspection visit, 807 KAR 5:066, Sec. 7, concerning unaccounted-for water loss, will remain on-going.

In 2011, the utility is hoping to begin construction of a 1,000,000 gallon elevated storage tank on Cat Nip Hill Road. This project will be financed through Rural Development funds and tobacco money. The utility is waiting on additional funding to help complete the project. Horn Engineering is working with the utility on this project.

Manager Tom Smith stated that the utility is looking for funding to replace some older water lines that have been in the system for over 40 years. The utility did some line upgrades and line extensions on Highway 169, Rhimeheimer Road, Old Barkley Estates and Perkins Lane. This project added nine new customers.

Jessamine-South Elkhorn Water District has all their storage tanks in the system inspected inside and out by Currens Company, Inc. Reports were available at the inspection for review.

A periodic regulatory compliance inspection will be conducted within a year.

Submitted by:

GW Jim R. Adcock

Jim R. Adcock
Utility Regulatory and Safety Investigator III

Steven L. Beshear
Governor

Leonard K. Peters
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

David L. Armstrong
Chairman

James W. Gardner
Vice Chairman

Linda Breathitt
Commissioner

August 7, 2012

Tom Smith, Manager
Jessamine-South Elkhorn Water District
802 South Main Street
P.O. Box 731
Nicholasville, KY 40340-0731

Nick Strong, Chairperson
Jessamine-South Elkhorn Water District
802 South Main Street
P.O. Box 731
Nicholasville, KY 40340-0731

PERIODIC REGULATORY COMPLIANCE WATER UTILITY INSPECTION

On July 10, 2012 Commission Staff Member Jimmy Adcock inspected the facilities and records of Jessamine-South Elkhorn Water District. A copy of the report of this inspection is enclosed.

Based on Mr. Adcock's findings, I am noting one deficiency regarding unaccounted-for water loss in excess of 15 percent of total water purchased contrary to 807 KAR 5:066, Section 7.The previous inspection was conducted on May 2, 2011 and no deficiencies were noted then.

Enclosed is one deficiency tracking report. Please review and complete the three sections under the heading "Response" no later than September 17, 2012.

Commission Staff strongly recommends that the District implement a water loss prevention/leak detection program to address unaccounted-for water loss. According to the District's annual report for 2011, unaccounted-for water loss equaled approximately 19.57 percent of the District's total water purchased. Simply put, the District spent approximately $226,334 to purchase water that never reached the end-user and produced no revenue.

In any future rate case proceeding, Commission regulations will prohibit the District from recovery, through rates, of a significant portion of the expenses associated with unaccounted-for water. 807 KAR 5:066, Section 6(3) provides:

PSC EXHIBIT 2

> Except for purchased water rate adjustments for water districts and water associations, and rate adjustments pursuant to KRS 278.023(4), for rate making purposes a utility's unaccounted-for water loss shall not exceed fifteen (15) percent of total water produced and purchased, excluding water used by a utility in its own operations.

This regulation requires the Commission to disallow, for ratemaking purposes, any expenses associated with unaccounted-for water loss levels exceeding 15 percent of total water produced and/or purchased. For example, if the District applied for an adjustment of rates based upon its 2011 operations, 4.57 percent of its total costs of water purchased, or $52,854, would be excluded for ratemaking purposes and could not be recovered through its rates for water service.

Given the financial consequences of a high rate of unaccounted-for water, the District should undertake an aggressive water loss prevention/leak detection program driven by a written systematic plan. Enclosed is additional information to assist in the development of a water loss prevention plan. The District should submit a copy of its water loss prevention plan along with monthly written progress reports to the Commission of actions taken to reduce unaccounted-for water loss, (e.g., main replacements, master meter installation, meter testing, installation of telemetry equipment). It should also submit monthly water loss reports to the Commission. The form for these reports is found at the Commission's website at http://psc.ky.gov/agencies/psc/forms/wateruse.xls and can be submitted to the Commission by email to pscwaternotice@ky.gov.

If you have any questions or wish further assistance, please contact me at (502) 564-3940, extension 409.

George W. Wakim

GEORGE W. WAKIM, P.E., MANAGER
WATER & SEWER BRANCH, ENGINEERING DIVISION

Attachment: JessamineSEWD-071012 Inspection Report
C: Julie Roney, DOW, EEC

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

UTILITY INSPECTION REPORT

Report Date: 7/16/2012
Report Number: JessamineSEWD-071012

BRIEF

Inspector:	Jim R. Adcock
Inspection Date:	July 10, 2012
Type of Inspection:	Periodic Regulatory Compliance Inspection
Type of Facility:	Distribution Facility
Name of Utility:	Jessamine-South Elkhorn Water District
Location of Facility:	802 South Main Street, P. O. Box 731, Nicholasville, KY 40340-0731 Attention: Tom Smith, Manager
Purpose of Inspection:	Periodic inspection of utility facilities operation and maintenance practices to verify compliance with PSC regulations.
Applicable Regulations:	KRS Chapter 278 and 807 KAR Chapter 5

INSPECTION

Description of Utility:	Distribution Facility
Number of Customers:	2,754
Area of Operation:	Fayette, Jessamine, and Woodford Counties
Supply Source:	Kentucky-American Water Company and City of Nicholasville
Distribution Description:	Average daily consumption of 754,487 gallons; 130 miles of distribution line (PVC); total storage capacity of 784,000 gallons
Workforce Summary:	4 full-time employees: 2 office; 2 field
Utility Reps in Insp:	Tom Smith, Manager; and Diana Clark, Office Manager
Date of Last Inspection:	May 2, 2011
DTR from Last Insp:	0
DTRs not Cleared:	0

Summary of items and facilities Inspected:
Records including, but not limited to, pressure charts; meter testing, reading and history; flushing; service interruptions; complaints; facilities inspections and procedures; operation and maintenance manual; facilities maintenance; safety guidelines; a copy of a water shortage response plan; and the service area map, etc.; Parks Lane Tank (500,000 gal.); Catnip Hill Tank (50,000 gal.); Sugar Creek Tank (117,000 gal.); Pollard Tank (117,000 gal.); and Clay's Mill Road Pump Station. During this periodic regulatory compliance inspection, it was not possible to review every record relating to all Commission requirements. Therefore, in some instances the results contained in this report are indicative of those items inspected and reviewed on a sample basis.

COMMONWEALTH OF KENTUCKY
PUBLIC SERVICE COMMISSION

UTILITY INSPECTION REPORT

Report Date: 7/16/2012
Report Number: JessamineSEWD-071012

FINDINGS

The utility's unaccounted-for water loss exceeds fifteen (15) percent of total water produced and purchased. Based on its 2011 annual report, the unaccounted-for water loss of 19.57 percent could be costing the utility approximately $226,333.80 annually.

RECOMMENDATIONS

Jessamine-South Elkhorn Water District should prepare and submit a proactive water loss prevention/leak detection program including timetables for actions taken to address the district's unaccounted-for water loss. Please review the attached information to craft a water loss prevention plan. In addition, the utility should submit monthly progress reports to update the Public Service Commission (PSC) of actions taken (such as line replacement, master meter installation, meter testing, telemetry, etc.) to reduce the unaccounted-for water loss coupled with completing and submitting monthly water loss calculation spreadsheets. The water loss calculation spreadsheet is located on the PSC website at http://psc.ky.gov//agencies/psc/forms/wateruse.xls and can be e-mailed to pscwaternotice@ky.gov.

ADDITIONAL INSPECTOR COMMENTS

Water loss for 2010 was 15.85 percent; water loss for 2011 was 19.57 percent.

Jessamine-South Elkhorn Water District is taking bids today on a new construction project for a 1,000,000 gallon elevated storage tank on Catnip Hill Road. This project will be financed through Rural Development funds and tobacco money. According to Diana Clark, Office Manager, the utility will seek PSC approval for this project after the bid process. Horn Engineering is working with the utility on this 2012-2013 project.

Jessamine-South Elkhorn Water District has all their storage tanks in the system inspected inside and out by Currens Company, Inc. Reports were available at the inspection for review.

The 2012 inspection resulted in one deficiency.

A periodic regulatory compliance inspection will be conducted within a year.

Submitted by:

Sd) Jim R. Adcock

Jim R. Adcock
Utility Regulatory and Safety Investigator III

Report Number: JessamineSEWD-071012 **Due Date:**

DTR Number: 1

Deficiency Tracking Report

Deficiency Detail

Utility	Date of Investigation	Investigator
Jessamine-South Elkhorn Water District	July 10, 2012	Jim R. Adcock

Regulation

807 KAR 5:066 Sec. 7 The utility's facilities shall be ... operated so as to provide adequate and safe service to its customers...

Deficiency:

The utility's unaccounted-for water loss exceeds fifteen (15) percent of total water produced and purchased. Based on its 2011 annual report, the unaccounted-for water loss of 19.57 percent could be costing the utility approximately $226,333.80 annually.

If Repeat Deficiency, Date of Last DTR:

Response (attach additional pages as necessary)

1) Explain why the deficiency occurred. Include information about what caused the deficiency and why it was not detected by the utility. (Attach extra pages as necessary)

2) Explain actions taken to correct the deficiency, including utility's responsible person, actions taken, and when it was (or will be) done. (Attach extra pages as necessary)

3) Explain actions taken to prevent the deficiency from occurring again, including utility's responsible person, actions taken, and when it was (or will be) done. (Attach extra pages as necessary)

Response Provided by: ______________________ Response Date: ________________

Signature: ______________________________

COMPONENTS OF A
WATER LOSS PREVENTION PLAN

How do the terms "water loss" and "weight gain" relate? Can it be that apathy, procrastination, or plain idleness might apply to both situations? Definitely, good intentions abound with either problem. No one wants to be overweight, just as no one who is responsible for the management and operation of a water utility wants to have excessive water loss. How do we attack these problems? In either case, we must identify the root of the problem, focus on a solution and stick with it! How many times have we heard the phrase, "If you fail to plan, you plan to fail." A good plan is the key to any long-term solution.

A person's physical and psychological make-up has a huge impact when attempting to solve the weight problem. Heredity affects us in many ways, but especially in regards to our ability to lose weight. What about the person who accepted the position of manager and soon learned that they had inherited an inadequately operated water system?

Age is another common factor in both problems. A water distribution system that was installed in the WPA days of the 1930's will most likely experience problems that newly installed water lines will not possess. The older that I get, the harder it is to keep the weight off! We can list other analogies such as our body shapes and sizes compared to the geographical terrain of our utilities and our distribution system sizes. However, let's get going with a proactive approach to the problem of water loss.

Accurate records are vital to any water loss prevention plan. How do we know the status of our water loss if we do not keep records? There is a water loss template that is available for download from the Kentucky Rural Water Association website (www.krwa.org). This Excel spreadsheet, or a similar record keeping system, can be utilized in a preliminary water audit. The initial step in water loss prevention is the water loss calculation. Secondly we must locate and eliminate all water leaks. Sounds easy, doesn't it?

The following steps can be utilized to prevent or reduce water loss and should be incorporated into a water loss prevention plan:

1. Read the master meters daily and at the same time each day. At a minimum, they should be read Monday through Friday. This will minimize water loss due to a large leak that can go undetected for a week or month.

2. Read all meters in the distribution system within a 3- to 5-day window. When the meters are read over a 2-week period, this will cause fluctuations of monthly water loss numbers. However, these numbers will average out over a year's period of time.

3. Divide the distribution system into zones or subsections where possible and calculate water loss for each zone. This will allow for the prioritizing of work based upon the severity of the problem in a particular zone.

4. Utilize computer billing software to generate water loss reports for sections or zones as well as to generate an overall water loss report.

5. Install bypass monitor meters as needed to isolate lines with potential leaks. A 5/8- x 3/4-inch meter will suffice for each 100-customer section of line.

6. Install a 2-inch bypass monitor meter at water storage tanks to isolate sections of the line with potential leaks during the night (1:00 a.m. to 4:00 a.m.)

7. Utilize pressure recordings to detect fluctuating pressures and abnormally low or high pressures in distribution system lines.

8. Test and change-out all meters according to Kentucky Public Service Commission (PSC) regulations. PSC regulations require residential meters to be tested and changed-out in 10-year intervals. Four-inch and larger meters are to be tested annually.

9. It may be feasible to hire a part-time operator to utilize leak detection equipment to search for leaks. A portion of the distribution system could be covered each month.

10. Identify sections of pipe in the distribution system with the most frequent line breaks. Budgeting for infrastructure replacement is imperative in any water utility.

11. Having a main transmission line from the master meter to a water storage tank will reduce pressure fluctuations in the distribution system and result in fewer line breaks.

12. Provide the necessary resources for manpower and equipment to properly maintain the distribution system appurtenances such as gate valves, pressure reducing valves, and hydrants.

Today's advanced technology can certainly enhance our water loss prevention plan. Computers not only utilize software for spreadsheets to calculate water loss expediently, but can be used in a variety of ways to identify areas of the distribution system with potential leaks. Both master meters and customer meters can be read by satellites or other automated meter reading mechanisms. Telemetry/SCADA systems operated with computers can produce trend charts for water flows, water pressures, and water levels in storage tanks. This kind of data is valuable in determining where leaks are or are not prevalent. Computers analyze hydraulic data to determine if theoretical and actual water flows and water pressures in the distribution system match. Computerized maps with GPS and GIS data are beneficial when used properly. A water utility's budget is the major limiting factor as to why technology is not used more frequently.

By industry standards, more than 15 percent water loss in a rural system in unacceptable. Probably, no one realizes this more than the managers of water districts, water associations, and investor-owned utilities under the jurisdiction of the Kentucky Public Service Commission. Just as we should be concerned with our health due to being overweight, the PSC is concerned with the financial health and well-being of water utilities under their jurisdiction in Kentucky. PSC inspectors routinely discuss water loss during their inspections. When a water system exceeds 15 percent water loss on their annual report to the PSC, a deficiency is issued. Numerous water systems' response to the PSC's Deficiency Tracking Reports (DTR) has been deemed unacceptable by PSC. A common request from PSC to the water system with a deficiency due to water loss is for a water loss control plan. A good water loss control plan should include the above-mentioned components with a time frame to implement the improvements and follow-up evaluations to measure the success of the plan.

Whether we are weighing in or wading in, we should always do so with a goal in mind. We cannot continue to ignore our problem and hope it resolves itself. Just as there are various diets to control an individual's weight, there are various methods for controlling water loss.

Let's start implementing all of our good intentions!

By Barry Back

— SAMPLE —

OK'd by Whitley Co. Water District for use. GW 10-12-1

Whitley County Water District

WATER LOSS PREVENTION AND LEAK DETECTION PROGRAM

The Whitley County Water District has a distribution system that was originally comprised of a number of community water systems. Over the years management has obtained funding to replace the aging water pipes in the small communities and combine them hydraulically where geographically feasible. Currently, the Water District purchases water from the City of Corbin via two master meters, the City of Williamsburg via eight master meters, the City of Jellico, Tennessee via two master meters and via one master meter from the McCreary County Water District. In total there are approximately 265 miles of transmission mains, over 3300 customer services, 3 pumping stations, and 4 water storage tanks. Water loss has been a continuing problem for the Water District partially due to abnormally high water pressures in parts of the distribution system. Water loss was extremely high during December 2010 and January 2011. However, the Water District is committed to allocating a sufficient amount of resources to identify and correct water loss, thus improving its operating efficiencies.

The following plan outlines processes and procedures that the Whitley County Water District will conduct on a routine basis (both in a reactive and proactive mode) to identify and repair water line leaks, identify and monitor un-metered water usage, and reduce its overall water loss.

1. **ROUTINE PROCEDURES (Daily/Weekly/Monthly):**

   A. COMMUNICATIONS: Monthly meetings to address the status of water loss by personnel from the office, distribution department and board members are planned to assure a unified team effort to minimize water loss.

   B. MASTER METERS: Read & record all master meter readings throughout the distribution system at approximately the same time each day:
   - Wholesale Master Meters
     1. Corbin #1on U.S. Highway 26
     2. Corbin #2 off U.S. Highway 26
     3. Highway 25 West from City of Williamsburg on U.S. 25
     4. Highway 92 East from City of Williamsburg off U.S. 25
     5. Bank from City of Williamsburg on U.S. 25
     6. Briar Creek from City of Williamsburg
     7. Adkins from City of Williamsburg
     8. Savoy Road from City of Williamsburg
     9. Tackett Creek from City of Williamsburg
     10. Under-Pass ¾ meter from City of Williamsburg
     11. Jellico #1 from City of Jellico, TN
     12. Jellico #2 from City of Jellico, TN
     13. Highway 92 West from McCreary County Water District

   C. RECORDING READINGS: All master meter readings shall be recorded in log books or on spreadsheets. Record readings of both registers on compound meters.

SAMPLE

D. CONSISTENT METER READING SCHEDULES: Establish a schedule wherein all customer meters are read at approximately the same time each month to ensure that any inconsistencies are identified and potential service line problems are identified and corrected.

E. FIELD PERSONNEL RESPONSIBILITIES: All distribution personnel (meter readers, maintenance, etc.), shall immediately report to their supervisor any identified water leaks, tank overflows, telemetry problems, or other concerns that are presently or could result in water leaks or loss. A work order will be generated by the supervisor to address the problem immediately or at the earliest possible time, given the urgency of the problem reported.

F. OFFICE PERSONNEL RESPONSIBILITIES: All office personnel shall immediately report any customer reported leaks, tank overflows, pressure problems, or other issues (whether during regular operational hours or after hours) to the appropriate field supervisor. The office supervisor will generate a work order and coordinate with the field manager to make a determination as to whether a field crew needs to be dispatched immediately or later, based on the urgency of the problem.

G. RECORDING DATA: Daily and monthly records (via computer data bases, manual logs, or spreadsheets) shall be maintained by appropriate supervisory personnel to record and analyze the following information:
- Daily and weekly master meter readings
- Pump station run times
- Estimated water losses from line breaks, tank overflows, hydrant usage, etc.
- Metered customer water sales by route
- Other un-metered water usage

H. DATA ANALYSIS: Water purchased and usage data obtained and recorded (item F above) shall be evaluated and analyzed on a daily/weekly/monthly basis to determine:
- Water production and purchase amounts
- Metered usage
- Known un-metered usage
- Known losses from line breaks, etc.
- Water loss by distribution zone

I. FOCUS ON DISTRIBUTION SYSTEM ZONES: The Water District's present system has thirteen separate zones as determined by the above master meters.
- Master meter readings will be entered into an Excel spreadsheet daily to identify excessive usage that may indicate a water line break.
- Monthly water loss reports will be compiled for each of the thirteen zones.
- Data analysis will be focused on water usage and loss in each of these major zones in order to prioritize leak detection efforts based on potential water loss in each area.

— SAMPLE —

J. METER TESTING AND REPLACEMENT: Pursuant to PSC regulations, customer meters will be tested and/or replaced on a periodic schedule to ensure that they are registering water accurately.

- Meters are to be tested as follows:
  1. Larger meters (master meters and customer meters 4" and larger) shall be tested on an annual basis.
  2. All 3" meters will be every two years
  3. All 2" meters will be tested every three years
  4. All 1" and ¾" meters are to be tested or replaced new every ten years
- All meters will be replaced as warranted

2. LEAK DETECTION PROCEDURES

A. DISTRICT PERSONNEL: On a routine basis (weekly or bi-weekly, as routine system operations permit), District personnel will be assigned to leak detection shifts after hours (typically 10:00 PM to 3:00 AM). Customer usage is minimal at this time and allows field personnel to go valve to valve (and often meter to meter) with listening devices and detect abnormal flows. Personnel will perform leak detection in those areas with the highest known water loss, based on routine data collection and analysis.

B. OUTSIDE CONSULTANTS: Outside consultants will be utilized as circumstances and funding dictate. The Water District has routinely utilized the services of Kentucky Rural Water (specifically Tim Blanton) in this process and has also utilized the services of Kenvirons, Inc. for leak detection.

3. CAPITAL IMPROVEMENTS

As funding permits, the District will prioritize and acquire/install the following:

A. INTERNAL MASTER METERS: Additional master meters for subsections of the system will be prioritized and acquired in order to more accurately monitor water usage and identify water loss throughout the system.

B. BY-PASS METERS: As funding permits, additional by-pass meters will be installed to further isolate smaller portions of the distribution system in order to more accurately identify and correct water loss problems in specific areas of the system.

C. FLOW METER: One of the most important tools in detecting water usage and loss is a portable flow meter. As funds are available, the Water District will purchase one of these units.

D. GATE VALVES: All gate valves will be exercised as recommended in the Kentucky Division of Water Regulations. Valves which fail to operate properly will be replaced as funding permits.

E. MAPS: The Water District will maintain updated distribution system maps. Accurate maps depicting line size and location are vital to leak detection.

SAMPLE

F. REPLACEMENT OF OLDER TRANSMISSION MAINS: As noted above much of the distribution system has been replaced as the original community systems were merged hydraulically. As funding permits, new projects to replace remaining older pipes in the distribution system will be developed.

Horne Engineering, Inc.

216 SOUTH MAIN STREET • NICHOLASVILLE, KENTUCKY 40356 • (859)885-9441 • FAX (859)885-5160

ENGINEERS • LAND SURVEYORS • PLANNERS
email@horneeng.com

November 11, 2005

Barry Mangold
Forest Hills Development, LLC
555 West Fourth Street
Lexington, KY 40508

Re: Forest Hills Subdivision
Harrodsburg Road
Jessamine South Elkhorn Water District

Dear Mr. Mangold:

In the process of reviewing the construction plans for the water distribution system for your subdivision, it came to light that perhaps you were unaware of the Jessamine South Elkhorn Water District plan for construction of an elevated storage tank on adjacent properties. I base this assumption on the fact that the initial submittal of your construction plans did not show the Jessamine South Elkhorn Water District as an adjacent property owner. In fact, the District presently owns an acre of property immediately adjacent to the southeasterly corner of your development.

In the process of your engineer completing the submittals of the construction plans, they have shown the location of this property. My purpose in bringing this to your attention is to alert you to the fact that the District has plans to complete construction of a 1.0 million gallon elevated storage tank on this property in the year of 2006. Consequently, you should apprize all purchasers of these lots that this is planned and will happen. This should help to mitigate the later complaints of the property owners that they were unaware that such was going to occur. The fact that you will be required to show the adjoining property owner on your final plat, and since the property is owned by the Jessamine South Elkhorn Water District, one would assume that any person of normal intelligence would be put on notice that this property would be utilized most likely for an elevated storage tank. However, you probably would want to reinforce this by ample notification in your purchase contracts.

In the meantime, if you have any questions or wish to discuss this matter, please contact me at (859) 885-9441.

Sincerely,
HORNE ENGINEERING, INC.

John G. Horne

John G. Horne, PE, PLS
President

JGH/jt
cc: Board of Commissioners
Bruce E. Smith
Glenn T. Smith
Engr/3683
Engr/3625
Corr.
Q:\ProjectDir\Jsewd\WO3683\MangoldJSEWDSt

JSEWD EXHIBIT 1

EXHIBIT
tabbies
JSEWD -STRONG 1

AGREEMENT

This Agreement is made on the ___ day of March, 2006, by and between Forest Hills of Kentucky, LLC, a Kentucky limited liability company, of 1082 Wellington Way, Lexington, Kentucky 40513, hereinafter ("Forest Hills"), and Jessamine-South Elkhorn Water District, a Kentucky rural water district formed pursuant to the provisions of KRS Chapter 74, of 107 South Main Street, Nicholasville, Kentucky 40356, hereinafter ("JSEWD");

W I T N E S S E T H:

WHEREAS, Forest Hills has constructed a cluster-type, residential development on the east side of US 68/Harrodsburg Road inside JSEWD's territory;

WHEREAS, JSEWD owns property (hereinafter "Switzer Tract") adjacent and to the south of the rear portion of the Forest Hills' property on which it has plans to construct an elevated water storage facility; and

WHEREAS, Forest Hills desires that JSEWD change its plans as to the location of the water storage facility on the Switzer Tract;

NOW, THEREFORE, for and in consideration of the mutual covenants contained herein, the parties hereto agree as follows:

1. Forest Hills shall convey to JSEWD by general warranty deed, free and clear of all encumbrances, and by deed of easement, respectively, the one (1) acre parcel of real estate, shown on Exhibit "A" attached hereto, along with the access easement, also shown on Exhibit "A", that traverses Forest Hill's remaining property (hereinafter collectively "Property");

2. Forest Hills shall construct a 12' wide roadway within the aforementioned access easement consisting of 6" of #2 stone and 4" of DGA surface from the end of the pavement on Chinkapin Drive to the Property.

3. Forest Hills will retain and pay a firm suitable to JSEWD that shall conduct a subsurface investigation of the Property to determine the foundation capability of the Property to support a 1.0 million gallon elevated storage facility.

4. Forest Hills shall pay the legal fees incurred by JSEWD in drafting and negotiating this agreement, the deed of general warranty and the access easement, and shall pay the engineering fees incurred by JSEWD for surveying, platting and recording of the plat of the Property and the access easement.

JSEWD EXHIBIT 2

EXHIBIT
tabbies
JSEWD-STRONG 2

BRUCE E. SMITH LAW OFFICES, PLLC
201 SOUTH MAIN STREET
NICHOLASVILLE, KENTUCKY 40356
(859) 885-3393 + (859) 885-1152 FAX

BRUCE E. SMITH
bruce@smithlawoffice.net

February 2, 2011

PERSONAL DELIVERY
William M. Arvin, Sr., Esq.
108 West Maple Street
Nicholasville, Kentucky 40356

Re: Forest Hills Residents' Association, Inc. ("Association")
Jessamine-South Elkhorn Water District ("District") Tank Site

Dear Bill:

This letter will confirm our brief meeting on January 21, 2011 and a follow up telephone conversation we had during the week of January 24, 2011. As I advised them, the District's investigation of the new tank site proposed by the Association has revealed significant problems with regard to the title to this ground and other concerns.

First, the various plats of the residual farmland of Forest Hills which have been recorded do not agree with regard to the total acreage of this tract. Please review the plats recorded at Plat Cabinet 10 at Slides 121, 123, 143 an 224 and Plat Cabinet 11 at Slide 11. This disagreement places in question precisely how much land the Browns actually own and the configuration of same.

Second, the plat recorded at Plat Cabinet 10, Slide 143, which includes a portion of the residual, does not appear to have been amended such that it no longer has any legal effect.

Third, none of the aforementioned plats conform to the Cluster Ordinance regulations found in the Jessamine County Zoning Ordinance. For example, some of these plats reflect Community Green Space lots which are included as part of the residual space calculation, but exist as separate lots owned by an entity other than the individuals who own the residual. See Deed Book 646, Page 602.

Fourth, there is a substantial lien on the residual held by Wilkinson Development, LLC found in Deed Book 548, Page 544.

Fifth, your client proposes to convey the parcel presently owned by the District, which is located at the rear of Forest Hills, to the Association which is then to be consolidated to Community Green Space. As previously pointed out, the existence and ownership by a separate entity of the Community Green Spaces is violative of the Zoning Ordinance. Accordingly, increasing the size of such space through consolidation would be a further infraction.

EXHIBIT
STRONG GROUP 3

JSEWD EXHIBIT 3

Sixth, there is a serious question in my mind whether or not the owner of the residual can convey a portion thereof since dividing the residual is in direct contravention of the Zoning Ordinance and is expressly prohibited by it.

Other problems which exist and that are unrelated to the issue of title, but still concern the District are as follows:

1. The configuration of the lot offered in exchange for the District's existing lot will not accommodate the above ground storage tank the District is required to construct. See Horne Engineering, Inc. letter attached.

2. The letter of intent from the owners of the residual from which the new lot will be taken is only signed by one of the owners. This calls into question the commitment purportedly made by these owners.

In conclusion, it appears that there are substantial obstacles to an exchange of property between the District and the Association. I would appreciate hearing your thoughts and your estimate of a timeline within which all of these problems can be cured, if at all possible.

Sincerely,

Bruce E. Smith

Enclosure

cc: Mr. Nick Strong
Mr. John G. Horne
Mr. W.D. Bates

g:\...\SEWD\Forest Creek LLF\Arvin ltr 20211

.UCE E. SMITH LAW OFFICES, PLL

201 SOUTH MAIN STREET

NICHOLASVILLE, KENTUCKY 40356

(859) 885-3393 + (859) 885-1152 FAX

BRUCE E. SMITH
bruce@smithlawoffice.net

February 24, 2011

PERSONAL DELIVERY
William M. Arvin, Sr., Esq.
108 West Maple Street
Nicholasville, Kentucky 40356

Re: Forest Hills Residents' Association, Inc. ("Association")
Jessamine-South Elkhorn Water District ("District") Tank Site

Dear Bill:

This letter will confirm the decision made by the Board of Commissioners of the District at its February, 2010 meeting regarding the relocation of the above-ground water storage tank site as proposed by the Association. By motion, it was decided that the District will use the site which it purchased some years ago from Sue Switzer. The District regrets that it could not accommodate your client's concerns, but in the final analysis, there were too many obstacles to overcome in order to change the site and it is not in the best interests of the District's customer base to delay advancement of this project further.

In addition to the title and other problems set forth in my letter to you of February 2, 2011, the following additional factors combined to ultimately drive the District's determination to move forward with its presently owned site:

(1) The District is currently, and has been for some time, in violation of Kentucky Public Service Commission Regulations as to its water storage capacity in the Northwest Territory. To date, the PSC has not imposed any penalties upon or taken any action against the District, but the Board is seriously concerned that this state of grace could come to a sudden end.

(2) The District is under a short timeline in terms of obtaining funding for this project. Any further delay in moving forward on the funding request would in all probability mean that the District could not secure the necessary monies to construct the tank.

(3) A representative of the Harrod's Ridge neighborhood association appeared at the February meeting and expressed its extreme displeasure at the prospect of another tank being located in the immediate vicinity of its subdivision and being placed next to an existing tank. Because there is one tank already located inside this subdivision and there is another tank located on old US 68 within sight thereof, the District is concerned that the association may want to litigate a decision to construct a third tank on the site proposed by your client.

EXHIBIT
STRONG
GROUP 3

(4) Although your client may have been confident that it could, in time, cure all of the title problems with the proposed new site, the District has to comply with the title requirements of its funding agency. These requirements appear to be more stringent than the usual standards applied by commercial lenders.

Without mentioning any added factors which might come into play, the reasons stated above present a considerable "timing" problem for the District in terms of moving forward with the project. In view of the circumstance that the District now owns a site which is suitable for construction of a tank and which has been approved by the funding agency, any further delay places the District in a precarious position with the PSC and its customer base.

The Board asked me to convey its extreme disappointment in not being able to work through your client's concern with the present tank site and not being able to reach a resolution that would be acceptable to all of the residents in this part of its territory while at the same time permitting the Board to meet its obligations to the PSC and the rest of its customers.

Sincerely,

Bruce E. Smith

cc: Board of Commissioners
Mr. W.D. Bates

g:\...\JSEWD\Forest Hills\Arvin ltr 022211

BRUCE E. SMITH LAW OFFICES, PLLC
201 SOUTH MAIN STREET
NICHOLASVILLE, KENTUCKY 40356
(859) 885-3393 + (859) 885-1152 FAX

BRUCE E. SMITH
bruce@smithlawoffice.net

March 11, 2011

VIA E-MAIL: LOGAN.DAVIS@WELLSFARGOADVISORS.COM
AND FIRST CLASS MAIL
Mr. T. Logan Davis
c/o Wells Fargo Advisors
333 East Main Street, Suite 120
Lexington, KY 40507

Re: Forest Hills Residents' Association, Inc. ("Association") Proposal
Jessamine South-Elkhorn Water District ("District")

Dear Mr. Davis:

I represent the District. The District's Chairman, Nick Strong, has directed me to confirm in writing with you, as the Association's representative, a new proposal made by the Association relative to a new above-ground water storage tank site on the McMillen Farm to be exchanged for the District's present tank site ("Switzer site") adjoining Forest Hills Subdivision ("Forest Hills").

As the District understands it, the McMillen Farm is located to the east of and adjoins Forest Hills. Unlike, the previously proposed tank site by the Association, located on old US 68, the McMillen Farm tank site should not cause as many timing problems. Additionally, the District also understands that the Association is now willing to post a letter of credit which will insure that the District's customer base will not sustain any additional costs in changing sites.

Based on the foregoing understandings and keeping in mind that this project is still time-sensitive for other reasons stated in my letter to the Association's attorney, dated February 24, 2011, the District is willing to re-examine its prior decision not to abandon the Switzer site, so long as the following conditions are met:

(1) The Association shall post a $250,000.00 irrevocable, one-year letter of credit (subject to partial draws and in a form otherwise acceptable to the District), with the District as beneficiary, from a reputable bank by no later than the close of business on March 23, 2011. The purpose of this letter will be to guarantee payment by the Association of the

JSEWD EXHIBIT 4

EXHIBIT
tabbles JSEWD-STRONG 4

additional expenses which will be incurred by the District in the investigation of and possible change in tank sites;

(2) Submission to me within 30 days of the date of this letter of a binding purchase contract for the new tank site on the McMillen Farm with the location and dimensions of this new tank site to be determined by the District in its sole and unfettered discretion;

(3) Submission to me within 30 days of the date of this letter of a binding contract for the conveyance of the necessary easements for the path of the waterman and access road to the McMillen Farm tank site with the path of the watermain and the road to be determined by the District in its sole and unfettered discretion; and

(4) The receipt by the District within 60 days of the date of this letter of a satisfactory geo-physical report on the McMillen Farm tank site which confirms its suitability for the construction of the tank.[1]

In the event any one of the foregoing conditions is not satisfied, then and in such event, there will be no further discussions or negotiations with the Association and the District will return its attention towards obtaining the necessary additional financing and constructing the tank on the Switzer site adjoining Forest Hills. Furthermore, the Association shall be obligated to reimburse the District for all expenses, including but not limited to engineering, legal and administrative costs, incurred in the investigation of the McMillen Farm tank site as a condition of the District not calling the letter of credit to the extent of its expenses. Lastly, the Association shall execute a release of all claims that it believes it may now or in the future have against the District based on the failed exchange of these or prior sites.

In the event that all of the foregoing conditions are met, the Association shall have a plat prepared for recording in the Jessamine County Clerk's office which reflects the McMillen Farm tank site, the easements for the path of the watermain and access road to the site and the consolidation of the Switzer site to the McMillen Farm; shall cause to be prepared the necessary instruments for the exchange of the McMillen Farm site for the Switzer site and the conveyance of the easements; shall fully reimburse the District for all of its out-of-pocket expense incurred in the investigation and exchange of these sites; and shall execute a release of all claims that it believes it may have against the District now or in the future based on the failed exchange of prior sites.

If the Association agrees to the foregoing, please sign this letter at the space provided on the next page of this letter and attach the minutes of the meeting wherein the Association authorized the signing of this letter.

[1] The District agrees to pursue with all reasonable dispatch the acquisition of such a report after the posting of the letter of credit by the Association.

T. Logan Davis
March 11, 2011
Page Three

Sincerely,

Bruce E. Smith

The Association agrees to the foregoing conditions and obligations.

ITS ____________________ **Date**

cc: Commissioners

g:\...\JSEWD\Forest Hills\Notice 031111

Jessamine-South Elkhorn Water District

Information Request No. 11: Refer to JSEWD's response to Information Request No. 23 of the Intervenors' First Set of Requests for Information. For items (f), (g), and (h), please provide:

(a) Invoices or comparable documentation supporting the costs;

(b) The date(s) in which the costs were incurred; and

(c) A detailed explanation of why the costs were incurred before obtaining a certificate of public convenience and necessity to construct the water tank.

Answer: The initial Answer to Request No. 23 is amended as follows:

"(b) the engineer's costs associated with acquiring the proposed site and access thereto, and funding of the proposed tank's construction ($9,170.00)"; "(d) the legal fees associated with the acquisition of the site and funding of the proposed tank ($2,548.30)"; "(f) the cost of advertising the construction of the tank for bids and printing copies of plans ($9,011.58)"; "(g) the cost of upsizing the lines near the site to accommodate the construction of the tank ($70,647.80) – (i) JSEWD's contribution to upsizing loop line constructed by Forest Hills Subdivision developer ($39,690.01) and (ii) the cost of connecting the aforementioned loop line to the proposed tank site and beyond to the water main on Catnip Hill Rd ($30,957.79).

(a) See attachments to this Request and those at Request No. 20.

(b) See attachments to this Request and those at Request No. 20.

JSEWD EXHIBIT 5

EXHIBIT
JSEWD-STRONG 5

JSEWD EXHIBIT 6

Large Oversized Map

See Case File

Jessamine-South Elkhorn Water District

<u>Information Request No. 22</u>: Please refer to Table 1 in the CIP. Please update the table with the same data for each year beginning in 2006 to date.

<u>Answer:</u> Objection. JSEWD is under no obligation to update information contained in the CIP. Without waiving the objection, see Table 1 below:

<u>Table 1</u>

Summary of Meter Services
Jessamine South Elkhorn Water District

Year	Meter Services						
	Northwest		Southeast		Total		Total
	Residential	Commercial	Residential	Commercial	Residential	Commercial	All Services
2006	1976	62	377	1	2353	63	2416
2007	2060	67	380	1	2440	68	2508
2008	2115	65	424	1	2539	66	2605
2009	2109	68	436	1	2545	69	2614
2010	2149	69	435	1	2584	70	2654
2011	2158	66	435	1	2593	67	2660
2012	2212	63	444	1	2656	64	2720

[Witness: Counsel and John G. Horne]

JSEWD EXHIBIT 7

EXHIBIT
tabbies
JSEWD-HORNE 2

EVALUATION OF

JESSAMINE-SOUTH ELKHORN WATER DISTRICT WATER TANK SITING STUDY

By

PhotoScience

January 3, 2013

CONSTRUCTION PLANS

JESSAMINE - SOUTH ELKHORN WATER DISTRICT

CATNIP HILL PIKE 1.0 MG ELEVATED STORAGE TANK

WX21113016
PROJECT# 3569
SAI# KY200708131128
JESSAMINE COUNTY, KENTUCKY

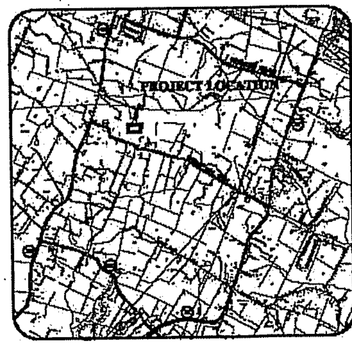
NOVEMBER 2010

OWNER

JESSAMINE - SOUTH ELKHORN
WATER DISTRICT (859) 881-0589
802 SOUTH MAIN STREET, NICHOLASVILLE, KY. 40356

HORNE ENGINEERING, INC.

ENGINEERS - PLANNERS - LAND SURVEYORS
216 SOUTH MAIN STREET - NICHOLASVILLE, KY. 40356
(859) 885-9441 FAX (859) 885-5160



COMMISSIONERS

L. NICHOLAS STRONG - CHAIRMAN
JERRY HAWS - VICE CHAIRMAN
GEORGE DALE ROBINSON - SECRETARY
JAMES HALL - TREASURER
JOHN BLACKFORD - VICE SECRETARY

GLENN T. SMITH - MANAGER / OPERATOR
DIANA CLARK - OFFICE MANAGER

INDEX

A AERIAL LOCATION MAP
1 SITE PLAN
2 STORM PROFILE/DETAILS
3 ELEVATION VIEW
4 ACCESS ROAD PLAN & PROFILE
5 FENCE/REGRADE PLAN
6 LANDSCAPE & EROSION PLAN

Prepared by:
Horne Engineering, Inc.
216 S. Main Street
Nicholasville, KY 40356

John G. Horne, PE, PLS

February 22, 2013

JSEWD EXHIBIT 8

EXHIBIT
3
JSEWD-HORNE 4

Table of Contents

EVALUATION OF JESSAMINE-SOUTH ELKHORN WATER DISTRICT WATER TANK SITING STUDY

By:

PhotoScience

January 3, 2013

STATEMENT OF PURPOSE

The purpose of this report is to present an evaluation of the correctness and applicability of the siting study which was conducted by PhotoScience in regards to the proposed 1.0 MG Elevated Storage Tank located on the property owned by Jessamine-South Elkhorn Water District and commonly known as the Switzer site. This evaluation will consist of the following categories:

- Applicability of EPRI Siting Method
- Engineering Criteria Applicable to Water Storage/Distribution
- Evaluation of PhotoScience Methodology
- Costing of Proposed Alternates
- Evaluation of Proposed Sites Alternate
- Conclusions

This analysis does not purport to dispute or debate the applicability of the EPRI/GTC Overhead Electric Transmission Line Siting Methodology as it is applied to electric transmission line location, but does take exception to the hypothesis that the PhotoScience study is an application of this method or in fact that the EPRI/GTC Overhead Electric Transmission Line Siting Methodology is even applicable to locating an elevated water storage tank.

METHODOLOGY

This evaluation consisted of review of the siting study completed by PhotoScience dated January 3, 2013 and the EPRI/GTC Overhead Electric Transmission Line Siting Methodology, Technical Report (on which the PhotoScience study was based), with the purpose to evaluate the applicability of PhotoScience's method and present conclusion resulting from this evaluation. Insofar as the study was strongly deficient in the applicable engineering criteria relating to water storage and distribution, this evaluation will apply the appropriate engineering criteria to the alternate sites selected by the PhotoScience Siting Study and from that information will then complete an evaluation of the proposed site and alternates with the determination of that site which is deemed to be the most appropriate.

APPLICABILITY OF EPRI SITING METHOD

PhotoScience employed a computer modeling program which they termed "EPRI Siting Methodology" in their evaluation of the proposed Jessamine-South Elkhorn Water District tank site. In their introductory paragraph, it was stated that this is a methodology that was developed to analyze siting of electric transmission lines. Also, although not stated, it is implied that the employed method is analogous to the EPRI/GTC Overhead Electric Transmission Line Siting Methodology.

One should note that there are significant differences between a high-voltage electrical transmission line and a water distribution system. The most obvious of which, is that the majority of a water system consists of pipes buried beneath the ground and the only mandatory aboveground components of the system are elevated water storage tanks.

In mountainous terrain it is even conceivable that the water storage tank can be belowground, in that it can be constructed on or near the top of the mountain.

Further, to state that "electric transmission structures and large aboveground water tanks can have similar impacts of the environment" is tantamount to saying an 18-wheeler and a yacht would have the same impact. All transmission structures have overhead lines leading to and leaving from, they are placed in series in a linear form and generally offer an unobstructed view, insofar as they are constructed in cleared right-of-ways. The structures are skeleton in form, supported on one or two legs, and generally are placed in a uniform linear spacing, Whereas, an elevated water storage tank is an isolated structure generally ovaloid in shape supported on several legs.

The reason for elevating the storage tank is to maintain the appropriate pressure head required by the hydraulic gradient of the distribution system, (i.e., the pressure is generated by the elevated position of the water). The water is delivered to elevated storage via booster pumps which transmits the water from the connection with a supplier and once placed in an elevated storage position, the elevation provides a uniform pressure head for delivery to the consumer. The key element is that most or all of the components of the distribution system are buried and not visible, while the visible components are mostly fire hydrants and storage tanks. All components of a high voltage transmission line, including the supporting tower structures and the transmission wires, are visible to the public – and in all cases this is exacerbated by the fact that the route must be contained in a right-of-way that is essentially void of all trees and structures ranging in width from 100-1,000 feet, resulting in an appearance of a highway. This is in drastic contrast to the water system that would only have isolated structures visible on the landscape.

In the simplest form, the EPRI/GTC Overhead Electric Transmission Line Siting Methodology is a tool that will aid in the selection of a "corridor". It is not an artificial intelligence machine wherein vast amounts of data are input, a button pushed, and the "correct transmission line site" is output. Rather it is a multi-stage input/output process that requires human manipulation and decision making throughout the various phases of the process with the final transmission line location based on "human decision".

This evaluation does not take exception to the value and application of this process as applied to high voltage electric transmission lines. In fact, based on review of the Technical Report, it has the appearance of being able to provide valuable information to speed up the human decision of siting a high voltage electric transmission line.

However, the analysis takes strong exception that the EPRI/GTC Overhead Electric Transmission Line Siting Methodology, or any similar methodology, is applicable or useful in the selection of a site for an elevated water storage tank. One must concede that the PhotoScience Siting Study is not the EPRI/GTC method, but is a skeletonized aberration of same.

In support of this allegation, following is a listing of some of the major points wherein it appears that the PhotoScience Siting Study drastically diverges from the ERPI/GTC method.

- Inference of the PhotoScience Siting Study is that it is only "view driven".
- If a study team was formed, the District was excluded.
- Who were the External Stakeholders?
- The only listed public concern was visual impact.
- What database features were elected?
- What was the grid value assignment of the data bases?

- The EPRI/GTC method is multi-phased.
- Is the PhotoScience Siting Study the first phase or all inclusive?
- The EPRI/GTC method does not have a "view" data layer.
- The EPRI/GTC method has data sets that acknowledge and consider high value use land, such as row crops, fruit orchards, pecan orchards, etc. The PhotoScience Siting Study gives no regard to agriculture land use.
- In fact, four (4) alternates are sited in such lands; Site A (tobacco field), Site D (sod field), Site F (alfalfa field), and Site H (thoroughbred horse farm).
- The conclusion of the PhotoScience Siting Study is a simple statistic table with no value summation or recommendation.

The drastic deviation of the PhotoScience Siting Study from the cited EPRI/GTC method, as demonstrated by the cursory listing above, is further exacerbated by a number of errors that exist in the "most accurate terrain map of Jessamine County that has ever been created". Those errors are, but not limited to the following.

Proposed Project Locations - Sites A, D, E and F are not located near a proposed waterline project. See Appendix A.

Engineering Criteria – The text states that blue line are water mains "larger" than 6", when in fact the lines shown are 6" and larger.

The spring indicated north of Sagart Lane/Catnip Intersection is in error. In fact, the spring is located approximately 1,500" northeasterly (See Photo No. 1)

The study does not show the spring located in the elbow of Catnip Pike on the Switzer property (See Photo No. 2).

The well on the Chaumiere Des Prairies Farm property is not shown (See Photo No. 3).

Viewshed Areas – 8. Site B (Brown Site), indicates area from which one would be able to see the existing tank as red. Consequently the non-red area should not be able to see the existing tank.

PHOTO NO. 1

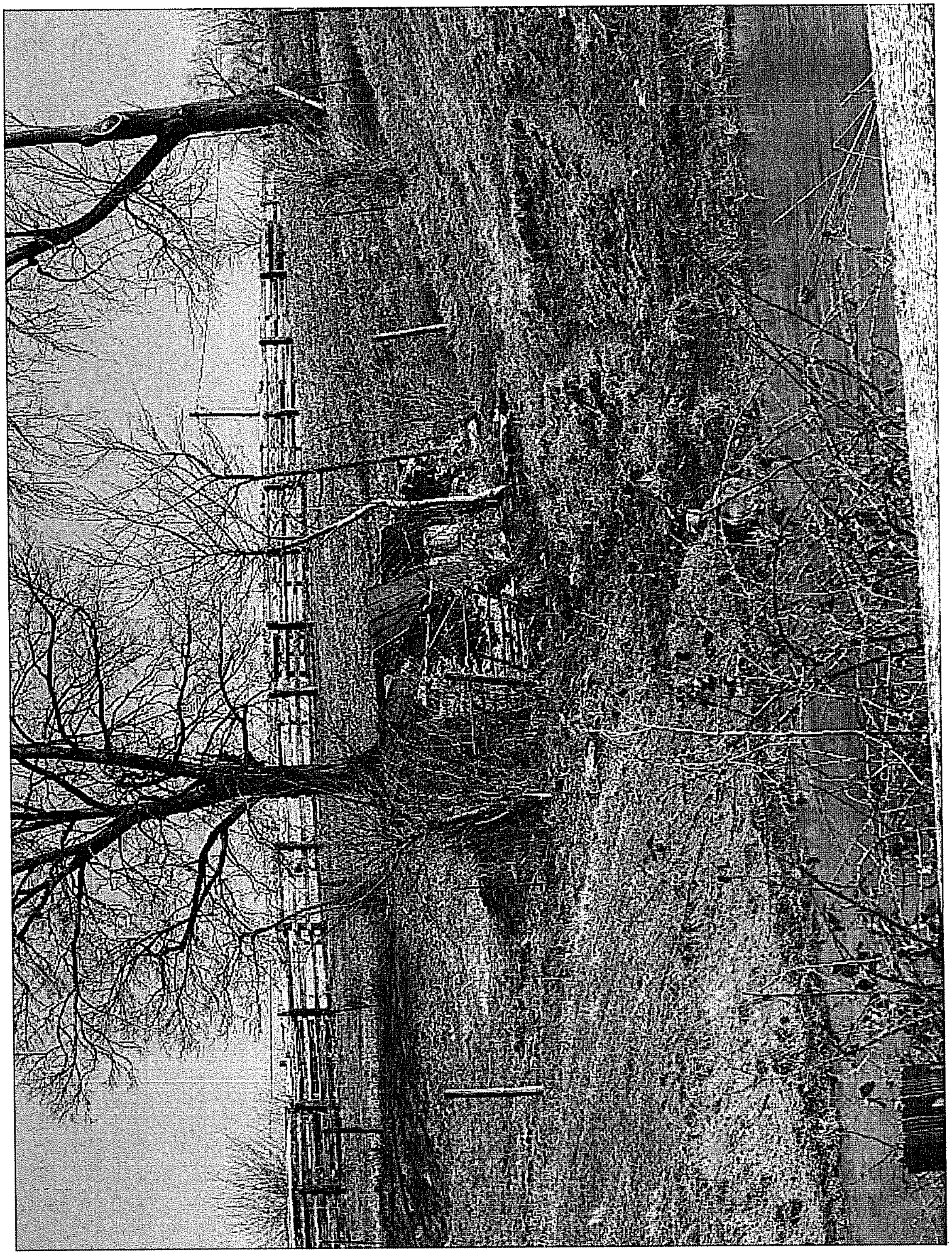


PHOTO NO. 2

PHOTO NO. 3

- Photo No. 4 was a view taken from area of No. 10 tee which is south of the parking lot for Harrods Ridge, and is clearly shown as non-red, yet the tank is clearly visible.
- Photo No. 5 was taken from the field south of Catnip Hill Pike west of the first curve which is clearly in the non-red area, yet the tank is clearly visible.
- Photo No. 6 was taken from the cul-de-sac of Eagle Drive, Harrods Ridge Subdivision and is clearly shown as non-red, yet the tank is clearly visible.

This clearly demonstrates that the analytical viewshed method utilized by Photo Science is, at best, general and not site specific accurate to reliably establish the precise number of resident viewers. From analysis of the defined red (non-view) areas indicated for the various sites, it is apparent that the PhotoScience method utilizes the summer canopy as a viewshed block. However, it appears that no consideration is given to winter opacity.

<u>ENGINEERING CRITERIA APPLICABLE TO WATER STORAGE/DISTRIBUTION</u>

For this particular evaluation, the engineering criteria will be restricted to those directly attributable to the alternatives proposed by the PhotoScience siting study. Although section two of that study which is titled "Engineering Criteria" alluded to the fact that engineering criteria was applied to the study, this "<u>criteria</u>" was simply a representation of the existing distribution system, an elevation 950 determination, and

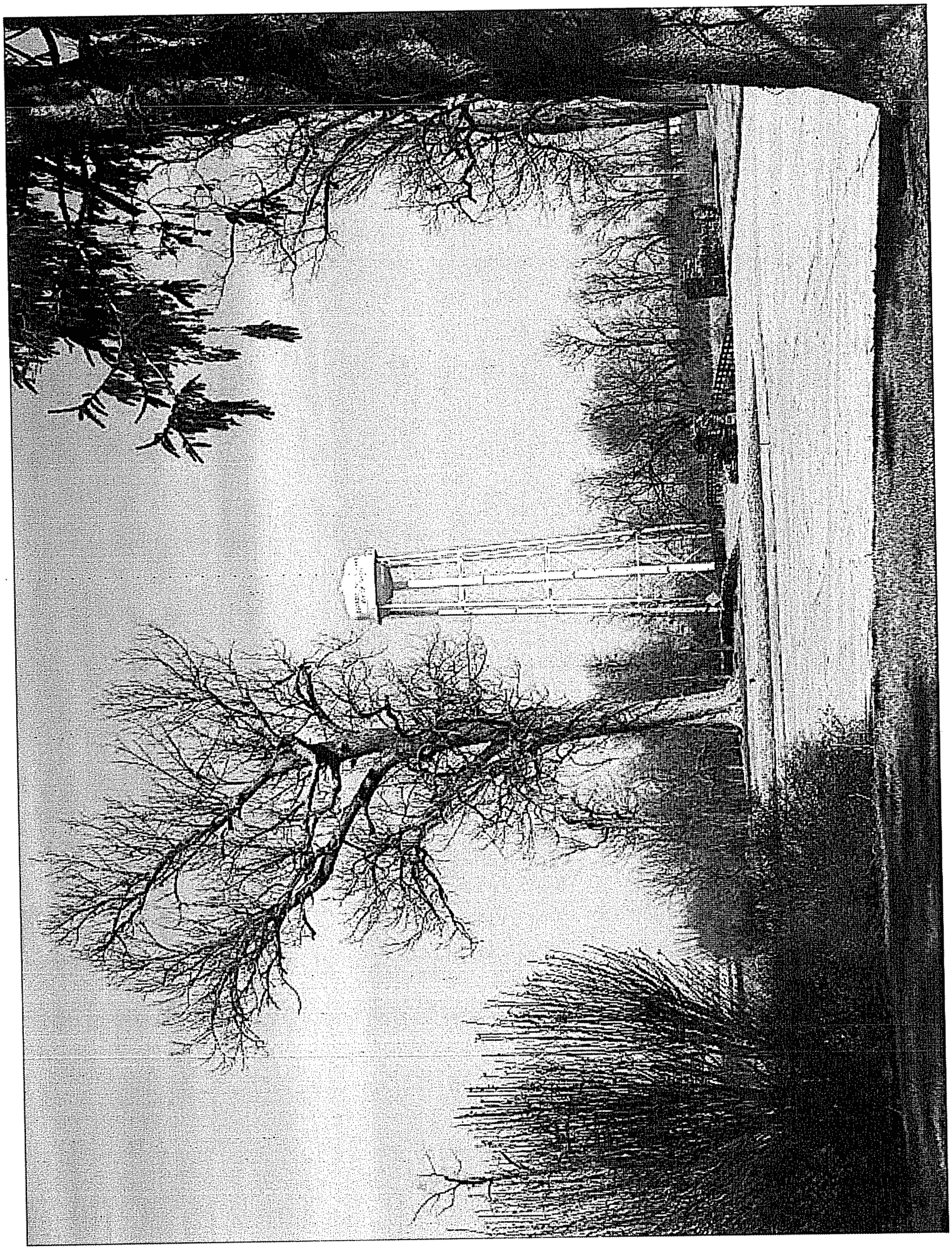


PHOTO NO. 4

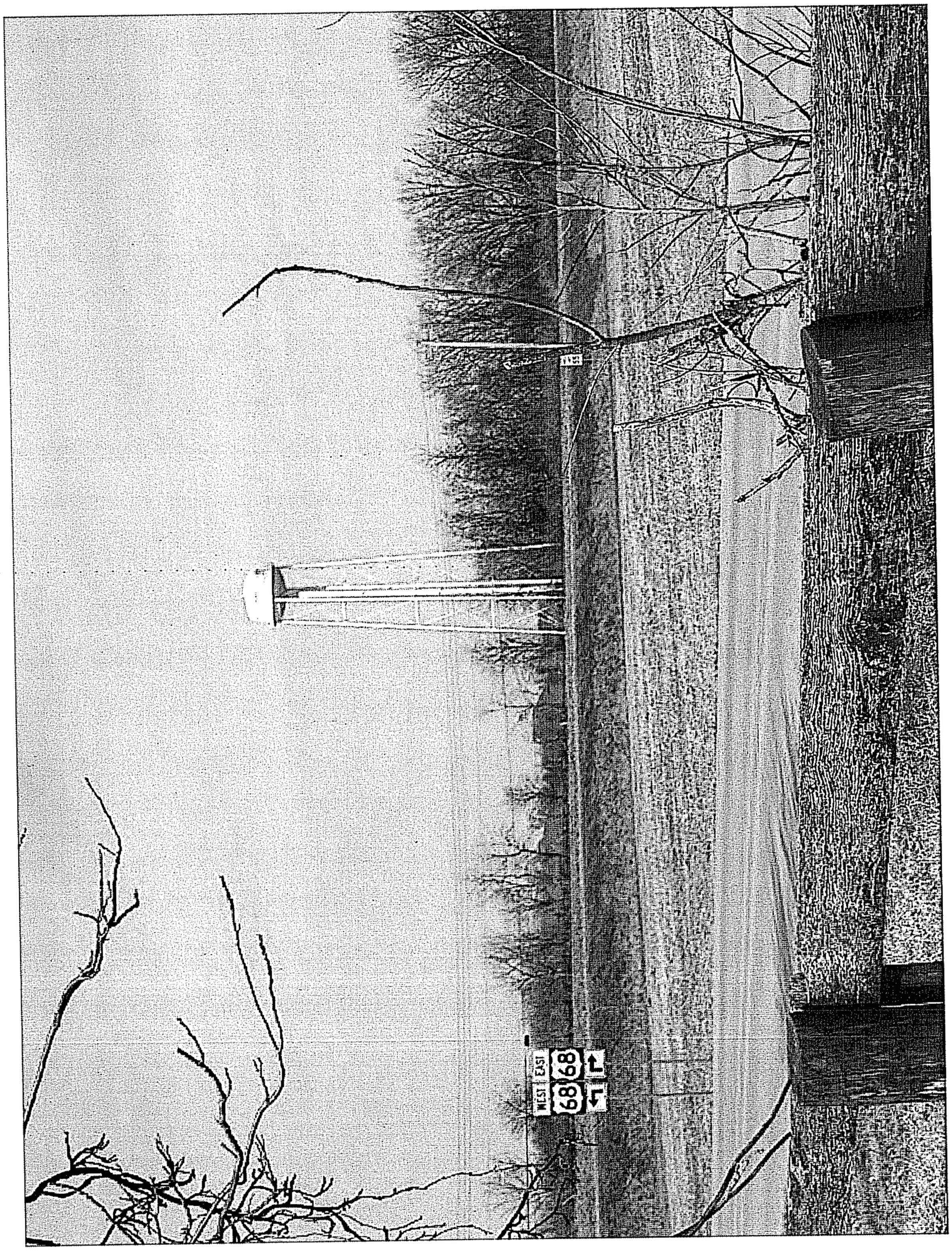


PHOTO NO. 5

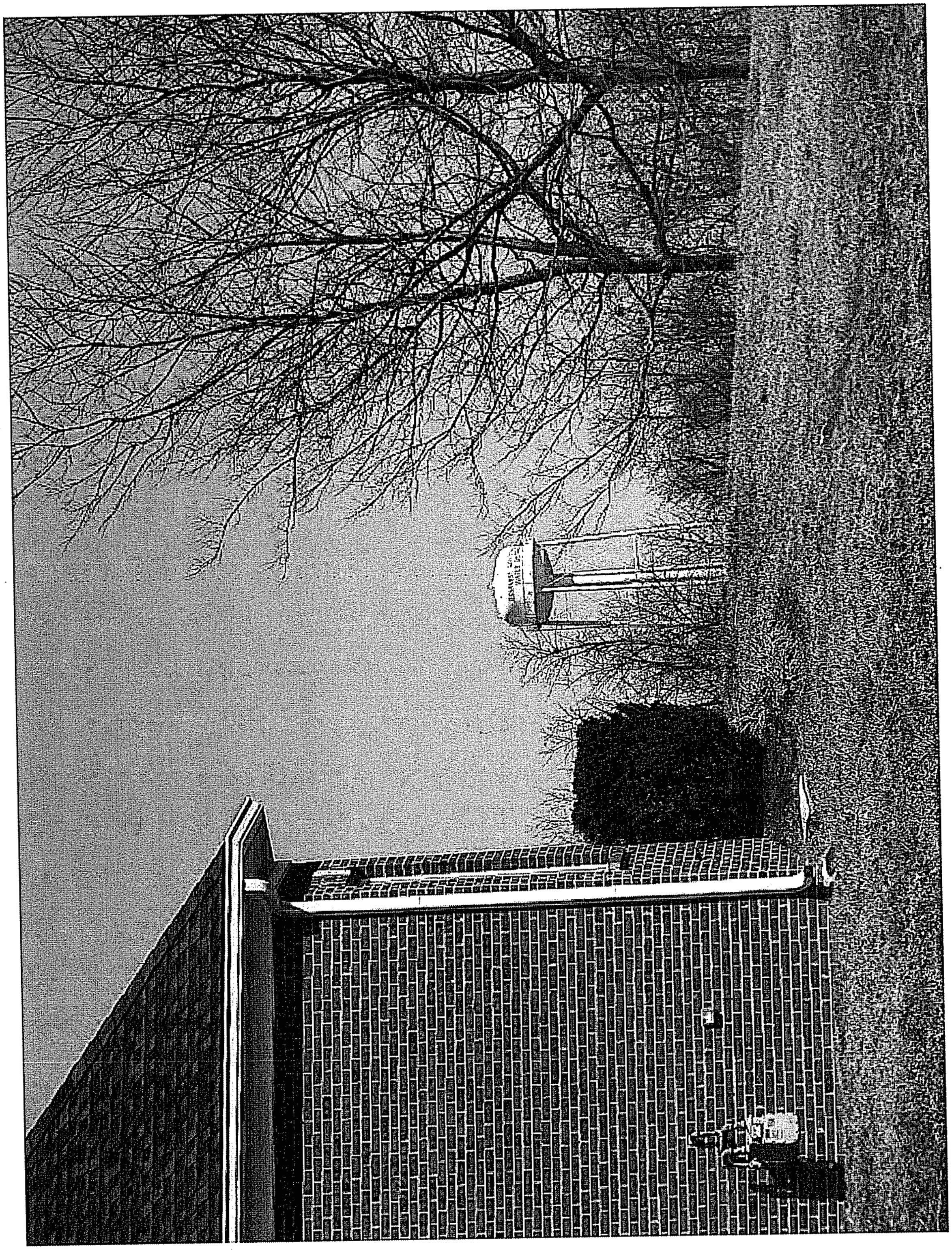


PHOTO NO. 6

what was termed “proposed waterline projects”, almost all of which were in error and not applicable.

The first problem with the engineering criteria used in the PhotoScience Siting Study is the assumption that the tank site be on land that lies at least 950-feet above sea level. The proposed tank site should be in areas of elevation of 1,000 feet or greater. The other mistake that is noted in the study as well as in the exhibit on page 3 is the designation by blue color of water lines “greater than 6 inches”. The blue lines designated on the exhibit on page 3 show waterlines that are 6 inches in diameter and greater.

The exhibit also shows what PhotoScience designates as orange in color, the location of proposed waterline projects which they cite as being taken from the Kentucky Infrastructure Authority website. Contained in Appendix A of this report is a current (1/8/2013, 9:32:57am) copy of the stated Kentucky Infrastructure Authority website map on which the study area has been superimposed, as well as the alternative sites proposed by the PhotoScience Siting Study.

The validity of the proposed projects shown on the Kentucky Infrastructure Authority map is backed up by the listing of the current project profile numbers that are contained in the Jessamine-South Elkhorn Water District listing contained on the attached website pages with the dating of when that information was obtained, being January 7, 2013. There are a number of lines which PhotoScience indicates as being proposed waterline projects on their exhibit which are absent from that map as contained in the Kentucky Infrastructure Authority website. This is a significant error, insofar as PhotoScience based several (4) of their alternate selections on these erroneously cited waterline extension projects. Another significant error in this regard was the failure to determine what size of line was proposed to be constructed and the timeframe, had in fact, these proposed line locations been correct in the first place. It should be noted that the proposed project lines shown on the Kentucky Infrastructure Authority website represent current and "wish list" projects. Therefore, a line could be indicated that might be 20-years away or in fact never constructed.

Another proposed waterline project designation that is in error is the line that emanates from near the Sagart Lane/Catnip Hill intersection, going generally north – northeast to an area near Native Trace Road. If the study's authors had expended the effort to evaluate the Jessamine-South Elkhorn Water District boundary that was clearly defined on the exhibit showing the Jessamine-South Elkhorn Water District distribution system, they would have readily seen that this line is very near the easterly boundary of the District. Also, from evaluation of "the most accurate terrain map of Jessamine County that has ever been created." it would have been readily apparent that there is no apparent need of this line to serve existing structures, since all that are present are currently being served. Consequently, the alternate sites A, D, E, and F are based on erroneous information.

The proposed project emanating from the Switzer tank site and going generally northeast along the easterly boundary of Forest Hills Subdivision is not shown on the Kentucky Infrastructure Authority website map. There was a proposed project in the period of 2006 but was abandoned due to refusal of the Strohl and Baker families to grant an easement, which should be strongly indicative of the unavailability of Sites A and D.

It is important to note that siting of a proposed water storage tank is dependent on numerous criteria, other than accessibility to a **waterline.** The term should be accessibility to the distribution system at a point that provides the delivery capabilities sufficient for the efficient and feasible operation of the storage tank, especially one of the size required by Jessamine-South Elkhorn Water District.

As indicated in the current proposed Switzer site, the delivery piping to the tank must come from a distribution system that is capable of delivering the amount of water necessary to serve not only the customer demand, but also be able to provide adequate flow in order to maintain the storage capabilities of the tank. A number of alternates that the PhotoScience Siting Study indicated are adjacent to lines 4 inches and 6 inches in size, which are wholly inadequate to furnish sufficient flow to supply a storage tank.

The final sizing of a line and the connection to the adjacent distribution system would be determined by a detailed hydraulic analysis which is beyond the scope of this evaluation. However based on the author's familiarity and experience with the system, he is able to make a cursory evaluation of whether or not there would be necessary upgrades to the adjoining distribution system, as well as to unequivocally state that the connection to the water tank should be a minimum 12 inch watermain.

The minimum ground elevation stated (1,000 feet) is based on the mandatory elevation of the high-water level (HWL) of any **proposed** storage tank that would operate in the single pressure zone and at the existing hydraulic gradient. This high-water level is dictated by the high-water level of the other two existing storage tanks, whereas, the proposed tank elevation must meet very closely the HWL of the existing tanks. The reason being, that the proposed tank will be filled simultaneously with the other two existing tanks, and when all three tanks are full, the turn-off of the pump would be initiated. If the elevations are different and if the pump turn-off is initiated by a lower tank, then there would be storage in the higher tanks that would be wasted; conversely if the turn-off would be initiated by a higher tank there would be continuous overflow of the lower tanks, until the water levels of all three tanks is equalized, consequently, a large volume of water would be wasted. Therefore, it is quite apparent that all of the tanks must be operated simultaneously requiring that the HWL elevation of the proposed tanks be precisely equal to the existing tanks. Based on survey of the existing tanks, this high-water level elevation has been determined to be 1,171.68-feet.

Once the elevation of the storage tank is determined, then its position has to be fixed in space, at that elevation, by the construction of legs that support the tank from the ground level. These legs can be of any length that would be required to reach from the tank to the ground, therefore, the higher the ground elevation - the shorter the legs that will be required to support the tank. However, the longer the legs, the more expense, due to increased material and labor required to meet the increased strength design. The proposed Switzer tank has been designed and is based on a leg height of 110-feet. Consequently, any evaluation of alternative site must take into account the differential height of the proposed alternate and that of the proposed Switzer storage tank.

Another crucial item that the PhotoScience Siting Study did not account for was the archaeological and environmental requirements associated with a tank site. Any ground disturbance construction within the Commonwealth of Kentucky is evaluated during Clearinghouse and SRF review to determine whether or not a study survey would be required to determine if the proposed activities would be in conflict with an existing archaeological site or environmental issues (i.e., endangered species). The Commonwealth of Kentucky has determined that the proposed Switzer tank site did require an archaeological study and that study was conducted, but the review did not require an environmental study. Consequently, it can be correctly inferred that should the site be moved to an alternate site, then this study and possibly an environmental study would also have to be conducted on the proposed sites.

The PhotoScience Siting Study did not evaluate other criteria that are not specifically engineering specifications, but nonetheless are associated with site feasibility and selection. Those criteria among others are: (a) land cost, (b) land availability, (c) hydraulics, (d) location at usage centroid, (e) time loss, and (f) redesign, all of which are significant in regards to relocating the proposed tank to an alternate site, and should be accounted for in the selection process.

EVALUATION OF PHOTOSCIENCE METHODOLOGY

Figure 5, Built Environment with Viewshed, is an accumulation and indication of the results of the methodology employed by PhotoScience. The implication of the figure and the written explanation is that any area within the 1 ¼ mile radius that <u>is not shown as red</u> is a potential tank site with the implication being in the prior discussion that location there would not be visible to the residences in the Forest Hills Subdivision. This is in error because it appears that the basic presumption of the modeling methodology does not stipulate at what eye-height the observer is at the residence, and also it does not insert a 145-foot high structure in the equation. For example, the area immediately east and adjacent of the Switzer tank site is shown as green (i.e., not shown as red), and the

Switzer Site is clearly in red (i.e., visible). This means that if the tank was moved 50' to the east on the other side of the fence row trees, it would not be visible. Is it reasonable to believe the fence row trees are 145-feet tall?

It is quite apparent that when a 145-foot high structure is placed in the equation that essentially the entire circle would become red and there is no potential unseen site that a water tower can be located. The PhotoScience Siting Study implies that its methodology has a high degree of precision, whereby specific areas can be located on which a constructed water storage tank cannot be seen by an observer. This has been refuted in the discussion of Site B (Brown Site), by demonstrating that the indicated "NO VIEW AREA" in fact has a clear and unobstructed view of the existing 50,000 gallon storage tank, Site B (Brown Site).

It is apparent that the gist and direction of the entire PhotoScience Siting Study is nothing more than an effort to demonstrate that there are other sites away from the Intervenors that they would not be able to see, not an attempt to locate a site that would be invisible to the public. This effort demonstrates a complete disregard to the thoughts and consideration of other residents in the area and is a classic illustration of the NIMBY syndrome. Again, it should be noted that when this site was purchased there were few if any residences in the area that would have direct observation of the Switzer site which is demonstrated by Figure 7.

The PhotoScience Siting Study states in 7. Site C (Switzer Site), "There are 16 residences that will **likely** have a view of the tank if constructed at this location" (emphasis added). This statement then poses numerous questions that beg an answer,

1. What is likely? Will they or won't they?

2. View - is this all of the tank, bottom, top, finial, one leg, etc.?
3. Since the impetus of this study is based on Forest Hills residents, how many constitute the 16?

According to Figure 7, there are six (6) residences inside the one (1) mile diameter circle that are not located in Forest Hills. Per the study count, this would result in ten (10) residences in Forest Hills "likely" to view the proposed storage tank. There are 32 lots in Forest Hills Subdivision; therefore, those residences "likely" to view the tank are in the minority (31%).

The driving factor of the PhotoScience Siting Study, as well as the opposition of the Intervenors is, that if the proposed tank is constructed, it will be visible to them and it will diminish desirability and value of their property. The gist of their allegations and presentation is that this hypothesis is universally accepted and applied.

Based on this author's fifty (50) years of experience, not as a real estate appraisal expert, but as an engineer who has designed subdivisions for developers encompassing the majority of residential lots (in excess of 1,500) developed in Jessamine County and as project engineer for utilities who designs water distribution and sanitary and storm sewer systems, it has been my experience and observation regarding viewshed importance that viewshed is not the driving force as regards desirability and value of a lot. There is no universal acceptance and agreement of what constitutes acceptable or desirable viewshed. If it were, there would be only one (1) lot in the world and mass revolution to possess that utopian lot.

My fifty (50) years of engineering experience that includes extensive knowledge of real estate development in the area has demonstrated that there are a multitude of factors that dictate desirability of a lot above that of viewshed. Some of those are:

- Lot shape
- Slope (i.e., walkout basement)
- South exposure
- Street alignment
- Access
- Location
- School district
- Topography
- Lotting scheme

The argument by the Intervenors of diminished desirability and property values due to an elevated storage tank being visible to a lot owner is incorrect. Fortunately, there exists a situation to test the validity of this argument.

Situated immediately west of Forest Hills Subdivision is the Harrods Ridge Subdivision, which was designed by the author. When this subdivision was designed, there existed a 500,000 gallon elevated storage tank in the southwesterly corner of the property.

Eagle Drive was designed to follow the ridge line going generally southeasterly from its intersection with Golf Club Drive. Photo 7 is a picture of this intersection with the elevated storage tank clearly visible. In fact, the tank is visible throughout the length of Eagle Drive with Photo 8 taken at the southerly end and showing a view of the entirety of the tank full and unobstructed. Interestingly, those residences at the southerly end of Eagle Drive have a view not only of the 500,000 gallon tank, but also the 50,000 gallon tank as demonstrated by Photo 6. The bulk of the remainder of the homes in Harrods

Ridge have a view of both or one or the other of the two tanks, both of which existed before the development of Harrods Ridge Subdivision.

Following are tables showing the cost and sales history of each lot for both Forest Hills Subdivision and Eagle Drive in Harrods Ridge Subdivision and from this data, some interesting facts emerge.

Forest Hills Subdivision:

- The average size home is 8,170 SF.
- The average original residence value was $854,951.
- The average current residence value is $815,574.
- The current value represents a 3.5% drop in value thru the housing bubble.
- The 2013 average assessment is $842,369.

Eagle Drive:

- The average size home is 8,342 SF.
- The average original residence value was $846,398,
- The average current residence value is $830,991.
- The current value represents a 1.8% drop in value thru the housing bubble.
- The 2013 average assessment is $846,980

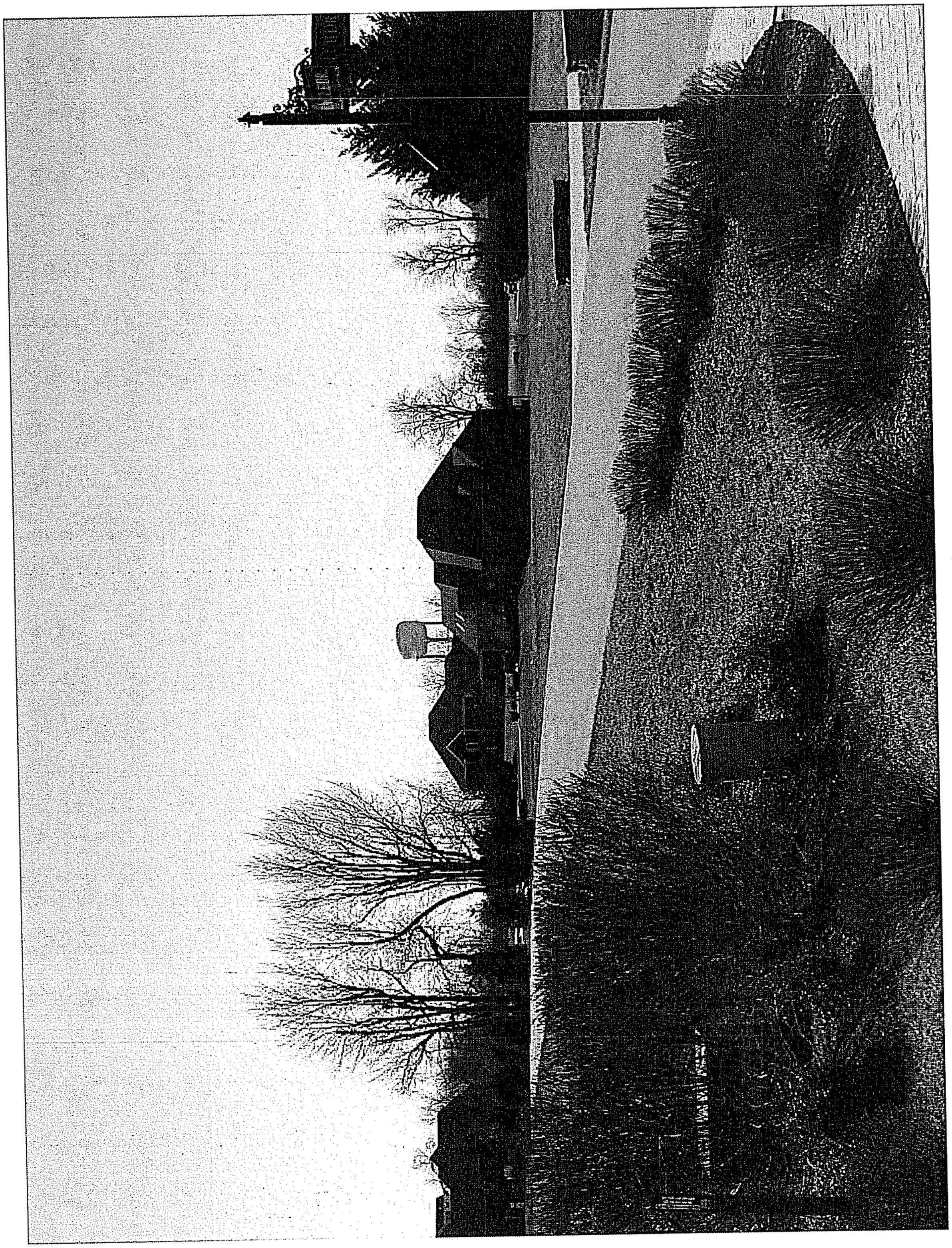


PHOTO NO. 7

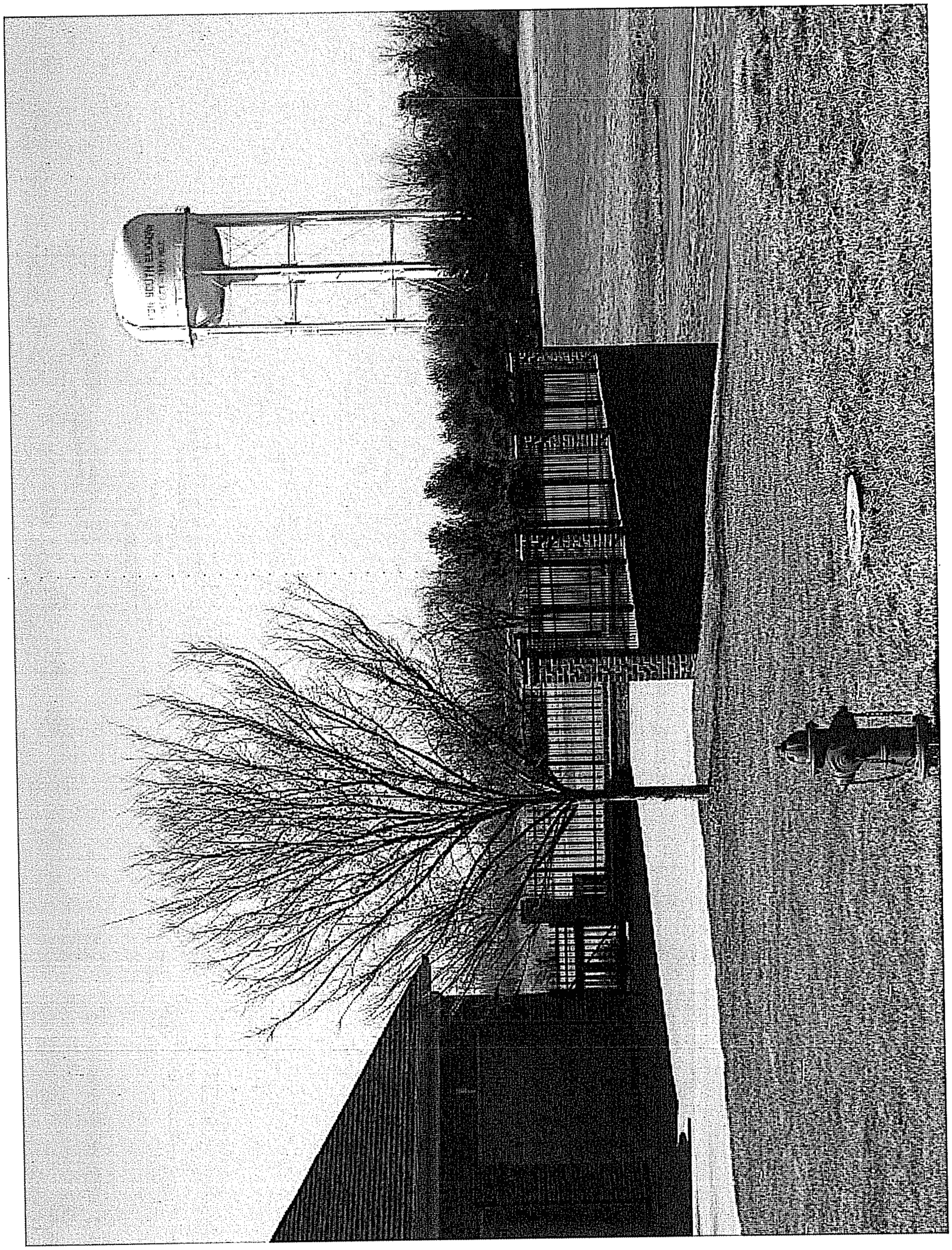


PHOTO NO. 8

FOREST HILLS SUBDIVISION

Address	Sale Date	Sale Amount	Deed Book/Page	(See Note 3) Lot/Tract No.	2013 Assessment	Status as of 01-15-2013 (See Note 4)	Square Footage of Residence
5784 Harrodsburg Road (See Note 2)	10/30/2007	$1,200,000	589/369	Tract 1 (Residual)	$60,885		
						Under Construction	
405 Burr Oak (See Note 1)	12/30/2010	$250,000	646/606	Lots 23 & 30			
	6/15/2012	$120,000	671/424	Lot 30	$120,000		
						Occupied	4178
500 Burr Oak	2/22/2006	$150,000	556/683	Lot 29	$154,064		
						Occupied	12525
505 Burr Oak (See Note 1)	3/14/2007	$225,000	578/466	Lot 31	$0		
						Vacant	
Burr Oak (See Note 1)	4/25/2007	$225,000	580/682	Lot 32	$225,000		
						Vacant	
600 Burr Oak (See Note 1)	4/18/2006	$175,000	560/241	Lot 28			
	7/30/2009	$165,000	623/707		$100,000		
						Occupied	9156
604 Burr Oak	4/18/2006	$175,000	560/229	Lot 27			
	10/10/2007	$1,260,615	591/224				
	7/30/2009	$1,495,000	623/709		$1,225,000		
						Occupied	9077
608 Burr Oak	4/14/2006	$340,000	560/237	Lots 7 & 26			
	7/24/2006	$160,000	566/177	Lot 26			
	6/2/2008	$400,000	CD18/25 **				
	10/3/2008	$340,000	611/335		$750,000		
						Occupied	6643
612 Burr Oak	4/26/2006	$170,000	560/522	Lot 25			
	11/23/2011	$635,000	661/582		$757,500		
						Vacant	
618 Burr Oak (See Note 1)	5/1/2006	$170,000	561/212	Lot 24	$170,000		
						Occupied	12329
619 Burr Oak	4/22/2006	$170,000	560/453	Lot 1			
	8/9/2007	$1,450,000	588/40				
	7/10/2009	$1,265,000	622/605		$1,265,000		
						Occupied	
622 Burr Oak	12/30/2010	$250,000	646/606	Lots 23 & 30			
	5/16/2012	$84,000	669/274	Lot 23			
	11/20/2012	$718,500	679/191		$718,500		
						Occupied	8281
623 Burr Oak	2/7/2006	$170,000	556/169	Lot 2			
	5/25/2007	$950,000	582/628		$950,000		
						Vacant	
626 Burr Oak (See Note 1)	12/1/2006	$170,000	573/385	Lot 22			
	6/29/2009	$153,000	623/106		$170,000		
						Occupied	8342
627 Burr Oak	4/13/2006	$170,000	560/75	Lot 3			
	1/18/2007	$500,000	575/694		$835,000		
						Occupied	7492
631 Burr Oak	4/13/2006	$340,000	560/64	Lots 4 & 22			
	3/10/2007	$183,845	578/315	Lot 4			
	12/23/2009	$971,000	633/01				
	4/9/2010	$775,000	636/392		$775,000		
						Occupied	8039
635 Burr Oak	7/17/2006	$170,000	565/632	Lot 5			

FOREST HILLS SUBDIVISION

	2/24/2010	$885,000	635/72		$835,000		
639 Burr Oak	3/15/2006	$170,000	558/140	Lot 6		Occupied	8798
	10/13/2006	$937,324	571/50				
	8/30/2007	$862,500	589/266				
	7/30/2009	$855,000	625/77		$855,000		
701 Chinkapin	4/18/2006	$340,000	560/237	Lots 7 & 26		Occupied	7127
	7/21/2008	$265,000	CD18/448 **	Lot 7	$560,000		
704 Chinkapin	3/31/2006	$170,000	559/193	Lot 21		Occupied	7710
	12/7/2007	$815,000	594/295		$750,000		
705 Chinkapin (See Note 1)	3/13/2006	$660,000	557/684	Lots 8, 9, 10 & 19		Under Construction	
	4/3/2008	$697,000	600/323 ***	Lots 8, 10 & 19			
	4/9/2012	$92,000	667/221	Lot 8	$92,000		
708 Chinkapin	3/6/2006	$165,000	557/400	Lot 20		Occupied	
	3/5/2012	$95,000	665/542				
	3/15/2012	$95,000	666/173				
	10/31/2012	$627,105	679/54		$627,105		
709 Chinkapin	3/13/2006	$660,000	557/684	Lots 8, 9, 10 & 19		Occupied	8730
	2/13/2007	$180,900	577/126	Lot 9			
	2/27/2008	$1,185,802	596/46				
	3/28/2011	$805,000	651/407		$805,000		
712 Chinkapin (See Note 1)	3/13/2006	$660,000	557/684	Lots 8, 9, 10 & 19		Occupied	
	4/3/2008	$697,000	600/323	Lots 8, 10 & 19			
	9/1/2009	$145,000	625/436	Lot 19	$145,000		
713 Chinkapin (See Note 1)	3/13/2006	$660,000	557/684	Lots 8, 9, 10 & 19		For Sale	7409
	4/3/2008	$697,000	600/323	Lots 8, 10 & 19			
	8/25/2009	$145,000	625/164	Lot 10	$748,000		
720 Chinkapin	6/5/2006	$330,000	563/194	Lots 11 & 18		Occupied	8519
	6/11/2008	$809,243	607/229	Lot 18	$809,243		
721 Chinkapin	6/5/2006	$330,000	563/194	Lots 11 & 18		Occupied	7429
	11/8/2007	$82,500	593/40	Lot 11			
	10/3/2008	$810,000	610/37		$700,000		
724 Chinkapin (See Note 1)	8/10/2006	$170,000	567/289	Lot 17		Occupied	6720
	1/16/2007	$175,000	575/550		$620,000		
725 Chinkapin (See Note 1)	8/28/2007	$170,000	589/319	Lot 12		Occupied	
	7/30/2010	$90,000	CD20/69**				
	3/23/2012	$83,000	666/481		$83,000		
728 Chinkapin	8/4/2006	$170,000	567/73	Lot 16		Occupied	7001
	8/17/2009	$705,000	625/62		$788,000		

FOREST HILLS SUBDIVISION

729 Chinkapin (See Note 1)	5/8/2006	$170,000	561/412	Lot 13		Occupied	
	5/4/2012	$100,450	668/597		$100,450		
732 Chinkapin (See Note 1)	8/28/2007	$160,000	589/323	Lot 15		Vacant	
	7/30/2010	$90,000	CD20/65**		$90,000		
733 Chinkapin	3/21/2007	$170,000	579/55	Lot 14		Occupied	7892
	2/8/2008	$874,917	597/209		$874,917		
	5/5/2010	$1	640/389				
Chinkapin	10/12/2010	$10	646/602	Green Space*	$0	AVERAGE	8170

* Property conveyed to Forest Hills Residents' Association, Inc. - Transfer appears to be in violation of Zoning Ordinance.

** Commissioner's deed resulting in foreclosure

*** Deed in lieu of foreclosure

TOTAL ORIGINAL VALUE OF RESIDENCE	$14,534,506	AVERAGE	$854,971
TOTAL CURRENT VALUE OF RESIDENCE	$13,864,765	AVERAGE	$815,574
TOTAL CURRENT ASSESSMENT VALUE	$14,320,265	AVERAGE	$842,369

Note 1 - Excluded from summaries since lot is currently vacant or original sale was for the land only.

Note 2 - Non-buildable residual - not included.

Note 3 - Sale date, sale amount, title source, 2013 assessment and square footage or residence information obtained from Jessamine County PVA office and/or Jessamine County Clerk's office.

Note 4 - Status determined by visual inspection.

EAGLE DRIVE - HARRODS RIDGE SUBDIVISION

Address	Sale Date	Sale Amount	Deed Book/Page	Lot/Tract No. (See Note 2)	2013 Assessment	Status as of 01-15-2013 (See Note 3)	Square Footage of Residence
201 Eagle Drive	5/25/2005	$179,000	539/611	Lot 33		Occupied	7158
	12/30/2005	$728,320	554/82		$800,000		
203 Eagle Drive	7/5/2005	$179,000	542/501	Lot 34		Occupied	9154
	3/23/2007	$825,000	579/145				
	2/25/2011	$652,000	649/366		$752,000		
205 Eagle Drive	4/18/2005	$179,000	537/456	Lot 35		For Sale	8345
	6/30/2006	$1,074,000	564/620		$1,134,000		
207 Eagle Drive	12/12/2005	$925,902	552/511	Lot 36	$925,900	Occupied	7733
208 Eagle Drive	12/2/2010	$850,000	645/710	Lot 40	$890,000	Occupied	8342
209 Eagle Drive	9/14/2006	$995,000	569/374	Lot 37	$995,000	Occupied	8786
210 Eagle Drive	6/25/2010	$724,843	640/44	Lot 39		Occupied	6796
	11/8/2012	$724,843	679/84		$724,843		
211 Eagle Drive	6/17/2005	$169,000	541/202	Lot 38		Occupied	8091
	8/21/2007	$660,000	588/494				
	9/21/2010	$690,000	643/02		$735,000		
300 Eagle Drive	2/21/2006	$189,000	556/600	Lot 62		Occupied	9238
	1/28/2010	$677,000	633/353		$641,000		
301 Eagle Drive (See Note 1)	11/5/2010	$140,000	644/715	Lot 46		Vacant	
	7/12/2012	$150,000	672/466		$140,000		
302 Eagle Drive	3/30/2006	$189,000	559/120	Lot 61		Occupied	8427
	7/31/2012	$829,000	673/334		$829,000		
303 Eagle Drive	9/27/2006	$189,000	570/157	Lot 47		Occupied	7398
	9/21/2009	$774,917	626/594		$774,916		
304 Eagle Drive	11/22/2010	$225,000	645/353	Lot 60		Occupied	
	9/20/2012	$699,000	676/41		$699,000		
305 Eagle Drive (See Note 1)	11/5/2010	$140,000	544/715	Lot 48		Under Construction	
	10/12/2011	$95,000	659/391		$95,000		
306 Eagle Drive (See Note 1)	11/5/2010	$140,000	644/715	Lot 59		Vacant	
	7/12/2012	$150,000	672/466		$140,000		
307 Eagle Drive	11/2/2007	$950,000	592/431	Lot 49	$950,000	Occupied	9308
308 Eagle Drive	5/30/2007	$200,000	583/79	Lot 58		Occupied	8945
	8/22/2012	$720,000	674/647		$720,000		
309 Eagle Drive	11/18/2009	$768,867	629/477	Lot 50		Occupied	9174
	9/6/2012	$768,867	676/662		$760,000		

EAGLE DRIVE - HARRODS RIDGE SUBDIVISION

310 Eagle Drive (See Note 1)	11/5/2010	$140,000	644/715	Lot 57		Vacant	
	4/11/2011	$100,000	651/305				
	6/30/2012	$152,000	671/577		$152,000		
311 Eagle Drive	6/30/2006	$196,000	564/691	Lot 51		Occupied	7910
	6/4/2010	$918,000	639/147		$918,000		
312 Eagle Drive (See Note 1)	11/22/2010	$225,000	645/350	Lot 56	$225,000	Vacant	
313 Eagle Drive (See Note 1)	11/22/2010	$225,000	645/347	Lot 52	$225,000	Vacant	
314 Eagle Drive	11/21/2007	$1,268,917	593/540	Lot 55		For Sale	8065
	3/5/2010	$1,150,000	635/102				
	1/2/2011	$1,150,000	648/427		$1,150,000		
315 Eagle Drive (See Note 1)	11/24/2010	$140,000	646/132	Lot 53	$567,500	For Sale	
316 Eagle Drive (See Note 1)	12/30/2005	$219,000	554/24	Lot 54	$864,000	For Sale	8941
						AVERAGE	8342
** Commissioner's deed resulting in foreclosure							
*** Deed in lieu of foreclosure							
TOTAL ORIGINAL VALUE OF RESIDENCE		$14,388,766	AVERAGE	$846,398			
TOTAL CURRENT VALUE OF RESIDENCE		$14,126,849	AVERAGE	$830,991			
			TOTAL CURRENT ASSESSMENT VALUE		$14,398,659	AVERAGE	$846,980

Note 1 - Excluded from summaries since lot is currently vacant or original sale was for the land only.

Note 2 - Sale date, sale amount, title source, 2013 assessment and square footage or residence information obtained from Jessamine County PVA office and/or Jessamine County Clerk's office.

Note 3 - Status determined by visual inspection.

From the facts shown above, it is readily apparent that the presence of an elevated storage tank(s) does not impact the value or desirability of a residential structure, as evidenced by Eagle Drive.

COSTING OF PROPOSED ALTERNATES

The cost of any project is a significant factor in the selection of that project. For that purpose, this portion of the evaluation will direct the evaluation toward determining a preliminary estimate of the costs that would be associated with developing the alternate tank sites, as proposed by the PhotoScience Siting Study.

The following categories will be evaluated as to the associated additional costs to the District, should the existing site be changed from the proposed Switzer Site to one of the proposed alternatives.

- Survey and platting
- Change in leg height
- Access road
- Piping costs
- Piping upgrade
- Geotechnical Survey
- Archaeological Study

Following is a brief discourse on the derivation of the applicable cost that will be applied uniformly to each of the alternatives.

SURVEY AND PLATTING – This cost is difficult to ascertain depending on what the current situation is with the title and description of the parent tract. However, for the purposes of this report, a realistic price would be $7,000.

CHANGE IN LEG HEIGHT – The ground elevation of the location of the tank site has a significant impact on the cost differential between that of the current proposed Switzer tank and the tank that would have to be constructed on the alternate site. As previously discussed, wherever the tank is located the high-water level of the tank must be maintained at 1,171.68-feet. The Switzer tank is based on a footer elevation of 1,023-feet, which then gives a leg height of 110-feet. When the leg height is changed from the 110-feet dimension, as it increases it also requires an increase in the foundation footers and reconfiguration of the leg segments that make up the total height. Also, it should be realized that there are eight individual legs on the tower requiring approximately $1,500 per vertical foot/per leg, resulting in a cost of $12,000 per vertical foot change in the tower height.

ACCESS ROAD – The tanks site must be accessible to a public road and the access road must be capable of supporting vehicular traffic. The typical access road is a 12-foot gravel road. The minimum pavement design for the access road should consist of 6-inches of #2 stone and 4-inches of DGA. Based on costs of prior and similar roads, one would expect the per foot cost of the access road to be:

Grading	$10.00/per lineal foot
Gravel	$19.00//per lineal foot
Drainage	$ 1.00/per lineal foot
Total Cost	$30.00/per lineal foot

PIPING COSTS – The storage tank must be connected to the existing distribution system via constructed piping. Due to the size of the tank, the minimum pipe size to be employed between the proposed tank site and the existing system is 12-inch PVC pipe. Based on prior records of similar bidding on the new installation of 12-inch PVC pipe the cost can be expected to be $30.00/per lineal foot.

PIPING UPGRADE – A predominate number of the alternates proposed are located in areas that are far removed from the existing distribution system and the most feasible point where they could be connected to an existing main would be at a point in the system where the mains are inadequately sized to furnish adequate delivery flows to the proposed tank. Therefore, these sites would require upgrading of the existing system by constructing parallel mains back to the point that would be able to furnish adequate and sufficient flows to efficiently operate the proposed alternate tank. The precise sizing and configuration of these mains would be determined by a detailed hydraulic analysis of the system, but for the purposes of this evaluation, the experience of the author indicates that the connection point should be at a point that is equivalent to the delivery of a 12-inch main, and for those areas that are less than 12-inch in size would require paralleling with a 12-inch to a point equivalent to a 12-inch main. Although not determined by the PhotoScience Siting Study, nor included in the Table 15 summary, and based on the author's some 40-years' experience with the

Jessamine-South Elkhorn Water District, the distances were scaled from a base map on which the proposed alternate sites were located.

The determined unit price budget cost for pipe upgrade should be:

12-inch PVC main - $45.00.per lineal foot.

GEOTECHNICAL SURVEY – There are other cost factors associated with a geotechnical survey such as location access, terrain, etc., however, one could expect that the geotechnical survey cost would be uniform to all the proposed alternates and that a figure of $4,750 would be realistic. This is based on the cost for the proposed Switzer Site.

ARCHAEOLOGICAL STUDY – The Commonwealth of Kentucky required that for the proposed Switzer tank site, that an archaeological study would be required. The environmental study was not mandated, due to the size and location of the proposed site. However, this is not to assume that some of the other sites, based on their location, may be required to have an environmental study. However, for purposes of this evaluation, it is assumed that only an archaeological study would be required for the proposed alternative sites, and based on the history of the Switzer tank site, that cost is projected at $2,600.

Utilizing the above derived unit cost and based on the statistics supplied in Table 15 of the PhotoScience Siting Study, following is a compilation of the additional cost required by the alternate sites.

ALTERNATE SITE COSTING

	Site A	Site B (Brown)	Site C (Switzer)	Site D	Site E	Site F	Site G	Site H
Piping	$165,000	$4,500	0	$90,000	$78,000	$7,500	$3,000	$6,000
($30/LF)	5,500 (3)	150 (4)	0	3,000 (5)	2,600 (7)	250 (9)	100 (12)	200 (15)
Pipe Upgrade	0	0	0	$126,000	$126,000	$126,000	$135,000	$67,500
(12" - $45/LF)	0	0	0	2,800 (6)	2,800 (8)	2,800 (10)	3,000 (13)	1,500 (16)
Access Road	$102,450	0	0	$115,620	$128,220	$6,750	0	0
($30/LF)	3,415	0	0	3,854	4,274	225	0 (14)	0 (17)
Leg Height	$60,000	$24,000	0	-$168,000	-$120,000	$276,000	$444,000	$432,000
($12,000/VF)	5	2	0	-14	-10	23 (11)	37	36
(1) Others	$14,350	$14,350	0	$14,350	$14,350	$14,350	$14,350	$14,350
(2) Land	$40,000	$40,000	0	$40,000	$40,000	$40,000	$40,000	$40,000
TOTAL	**$381,800**	**$82,850**	**0**	**$217,970**	**$266,570**	**$470,600**	**$636,350**	**$559,850**
Residences in Viewshed	0	30	16	5	6	15	6	9
Residences .5 mi Radius	1	46	26	6	8	25	6	16
Percentage in Viewshed	0	65	62	83	75	60	100	56

(1)	Archaeological	$ 2,600
	Survey	$ 7,000
	Geotech	$ 7,000
		$14,350

(2) Purchase price of Switzer site

(3) Site A south to 12" main at Forest Hills

(4) Connect to 12" main and loop to 10" main and 6" main west of Barbaro Lane

(5)(7)(9) South to Catnip Hill Pike

(6)(8)(10) West along Catnip to 12" main

(11) Study is in error, elevation is 1,000-feet

(12) Connect to Rhineheimer loop

(13) North along Rhineheimer to Catnip 12" main

(14) Assuming site adjacent to Rhineheimer Lane

(15) From Veterinary Lane upgrade

(15) Upgrade looping from Barbaro Lane to Mathews Lane

(16) Assume adjacent to Veterinary Lane

The decision maker tool currently in vogue is the matrix. In order to balance the weight of viewshed vs. cost, the number of viewers was reduced to percentage and the cost was relegated to one (1) point per $1,000. Following is the resultant matrix with summary ranking based on matric value with the most obvious winner being the proposed Switzer site.

	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H
% in viewshed	**0**	**65**	**62**	**83**	**75**	**60**	**100**	**56**
Piping	**165**	**4**	**0**	**90**	**78**	**8**	**3**	**6**
Pipe upgrade	**0**	**0**	**0**	**126**	**126**	**126**	**135**	**68**
Access Road	**102**	**0**	**0**	**116**	**128**	**7**	**0**	**0**
Leg height	**60**	**24**	**0**	**-168**	**-120**	**276**	**444**	**432**
Others	**15**	**15**	**0**	**15**	**15**	**15**	**15**	**15**
Land	**40**	**40**	**0**	**40**	**40**	**40**	**40**	**40**
TOTAL	**382**	**144**	**62**	**302**	**342**	**532**	**737**	**617**

	Matrix Ranking	Cost Differential	Matrix Value
#1	Site C (Switzer)	-0-	62
#2	Site B (Brown)	$82,850	144
#3	Site D (Strohl)	$217,970	302
#4	Site E (McMillen)	$266,570	342

EVALUATION OF PROPOSED ALTERNATE SITES

Following is a listing of errors and deficiencies which were revealed in the evaluation and review of the alternate sites proposed under the PhotoScience Siting Study. This evaluation was coupled with the individual viewshed as listed in that study and the statistics stated under Section 15 of that study.

Located in Appendix B is a prepared composite map of the various sites contained in the PhotoScience Siting Study on which is indicated the one half-mile viewshed study area, as well as the property owner's name of the proposed alternate site. Included on this composite map is the existing Jessamine-South Elkhorn Water District distribution system color-coded as to size and where applicable, the boundary of the Jessamine-South Elkhorn Water District. All of this information has been overlain on aerial photography obtained from the internet.

#7. **Site C. (Switzer site)**

(a) This review was unable to confirm the total residences in the viewshed which is listed as 26 in the statistics table. However, it is very interesting to note that of the 26 residences listed for the study area that only 16 noted as are within the viewshed, and of those, only 11 are within approximately a quarter-mile of the tank site with the majority of those being between 600-1,200 feet radius. Also, based on the graphics shown it appears that there are a number of homes that have been accounted for as being in the viewshed when only a very small portion of red is indicated on the residence. It is safe to say that based on the scale as used there will be only a very narrow window that a person would be "likely" to view the entirety of the tank proposed on the Switzer site.

(b) The statistics table notes that the proposed tank is 301 feet from the existing distribution line and 316 to the proposed distribution line. If the authors of the study had completed their due diligence and the Intervenors had furnished the information that had previously been forwarded, it would be quite evident from the construction plans that the tank site is located such that an existing 12-inch main fronts on the north and easterly side of the site. It is difficult to understand how the PhotoScience Siting Study can show an existing watermain in this position on <u>2. Engineering Criteria</u> and yet note the Switzer site as being several hundred feet from an existing main.

(c) As stated earlier in the report, the symbol line denoting a proposed water project is in error and should not have been considered or contemplated in the evaluation of the tank site.

#8. Site B. (Brown site)

(a) This is the site that the Intervenors proposed in their initial negotiations with Jessamine-South Elkhorn Water District and is located immediately adjacent to the existing 50,000 gallon tank site.

(b) There is no question that the Intervenors are aware of the deficiencies of this tank site, insofar as it was discussed in detail and also that the information regarding that analysis of this site was furnished in the information request sent to the Intervenors. Suffice it to say that because of the inherent legal ramifications, it is apparent that this site is not available.

(c) The statistics indicate that this site is 65-feet from a public road. However, the site is immediately adjacent to an existing county road which is the Old Harrodsburg Road (US-68).

(d) The statistics indicate that the proposed site is 78-feet from an existing distribution line and also it indicates that it is 490-feet from a proposed waterline. Again, the information shown on the site is in conflict with the distribution map that the Jessamine-South Elkhorn Water District furnished the Intervenors. The proposed site is immediately adjacent to a 12-inch main that was constructed during the development of the Forest Hills Subdivision and is immediately opposite a 6-inch and an 8-inch main located on the westerly side of Barbaro Lane.

(e) Suffice it to say that based on the inaccuracies of access, and the distribution main, it is apparent that persons preparing the PhotoScience Siting Study either failed to do due diligence on the existing infrastructure system or were lax in the review of the accessibility both as to access and existing water mains.

(f) The table 15.Statistic lists residences within viewshed as 30. However, the study is remiss in not noting that the proposed tank at Site B (Brown Site) would be within approximately 400-feet of US-68, a four-lane highway having an ADT count of 15,593[(a)] VPD, which would offer a completely unobstructed view of the entire tank. This huge number of viewers would certainly skew the hypothesis of, **"an important concern of the public is siting the tank in an area that has the least visual impact to the community."** (emphasis added).

[(a)] 15,593(08) STA 750, KYTC Traffic Station Counts, Nicholasville, Jessamine County, Kentucky, July 2011

#9. Site A.

(a) This site is located on the A.J. Baker Properties, LLC Farm which is located and fronts on Brannon Road.

(b) During the 2006 design of the water tank on the Switzer site, there was a proposal to extend a waterline from the tank site northerly along the McMillen/Strohl/Baker property line and connect to the existing mains on Brannon Road. However, in discussion with the property owners along this route, they were vehemently against providing an easement.

Because of, and subsequent to, the watermain reinforcement that was provided by the US-68 project (2008), this routing was abandoned.

(c) Consequently, it is safe for one to anticipate that a request to purchase a tank site in the area of a tobacco field would not be acceptable to the owner, insofar as he refused to provide an easement for a watermain.

(d) Because this proposed waterline is no longer required, service to this site would require construction of a new watermain from the proposed site to a point in the existing distribution system that would provide adequate flows to service the tank. This required piping would be southerly to the existing 12-inch main at the Switzer site - the distance being a total 5,500-feet.

(e) Putting a tank at this site would be further exacerbated by issues of access to the tank site. The nearest point of access would be from Brannon Road and would result in the construction of an access road of 3,415-feet in length.

#10. Site D.

(a) This site is located in the southeasterly corner of the Teddy Rucker and Timothy D. Strohl property located westerly of Windom Lane.

(b) This farm has operated as a sod farm for the past 20+ years and the proposed site is located in one of the sod fields.

(c) Access to the tank site would be very difficult, insofar as it would require locating an accessible alignment along and around the existing sod fields.

(d) As stated in Site A response, this property owner was approached in 2006 regarding an easement for a watermain along the westerly boundary, to which they were vehemently opposed. Therefore, it is safe to assume that this site is unavailable.

(e) The statistics indicate that the proposed site is located within 3,100-feet of an existing watermain and 2,781-feet from an existing distribution main, when in fact the property is being served by Jessamine County Water District #1 and that the closest watermain to this property would be a 6-inch main at the end of Cassity Way which is located in that part of the existing distribution system that is insufficient to serve a 1,000,000 gallon tank.

(f) In order to serve a tank at this site, it would require construction of a new 12-inch main to the Catnip Hill Pike area which would require 3,000-feet of piping, and upgrade along Catnip Hill Pike to the existing 12" main would require construction of an additional 2,800-feet of piping upgrade.

(g) Again, the PhotoScience Siting Study indicates a proposed watermain along the general area from Catnip Hill running north and terminating at some undisclosed point. And, as previously noted, this is completely in error, since there has never been an intended project in this location and of this nature. Also, as previously noted the information shown on the Kentucky Infrastructure website (Appendix A) does not show a proposed project anywhere near this area. Consequently, any references to distance to proposed mains are in error.

#11. Site E.

(a) This site is located in the northeasterly corner of Chaumiere Des Prairies Farm which is termed the McMillen Farm in the PhotoScience Siting Study.

(b) As with Site D, this study suggests that there is a proposed main in close proximity to this site, when in reality there is no proposed main and the nearest existing distribution main is located along Catnip Hill Road. However, this is a 4-inch main and would require substantial upgrade along Catnip Hill Road in order to service this site. The reference given in the statistics table as regarding distance to existing mains, public roads, etc. are in error. The scaled distance being a requirement of 2,600-feet of 12-inch main from the tank site to Catnip

Hill Road and then an upgrade along Catnip Hill Road of 2,800-feet. Access would naturally be from Catnip Hill Road and the most direct access being along the easterly property line consisting of 4,274-feet.

(c) The negotiations with the Forest Hill residents and McMillan that were conducted early on, suggested a tank site that is located approximately midway between Sites E and F. During the negotiations with these parties it was not recorded that this Site E or Site F was ever proffered.

#12. Site F.

(a) This site is located in the southeasterly corner of the Chaumiere Des Prairies Farm.

(b) From the indicated location of this site on the map and from a field observations based on the direction of the property line, it appears that this site is located in or on the edge of a large sink-hole. (See Photo 9)

(c) The site is located on Catnip Hill Road, and although not indicated to be adjacent to the road, one would assume that if utilized, it would be located adjacent to the road. Therefore, the access distance would be negligible. However, the site statistics indicates a distance of 225-feet from the public road to the site. Therefore, this distance shall be used for purposes of cost comparisons.

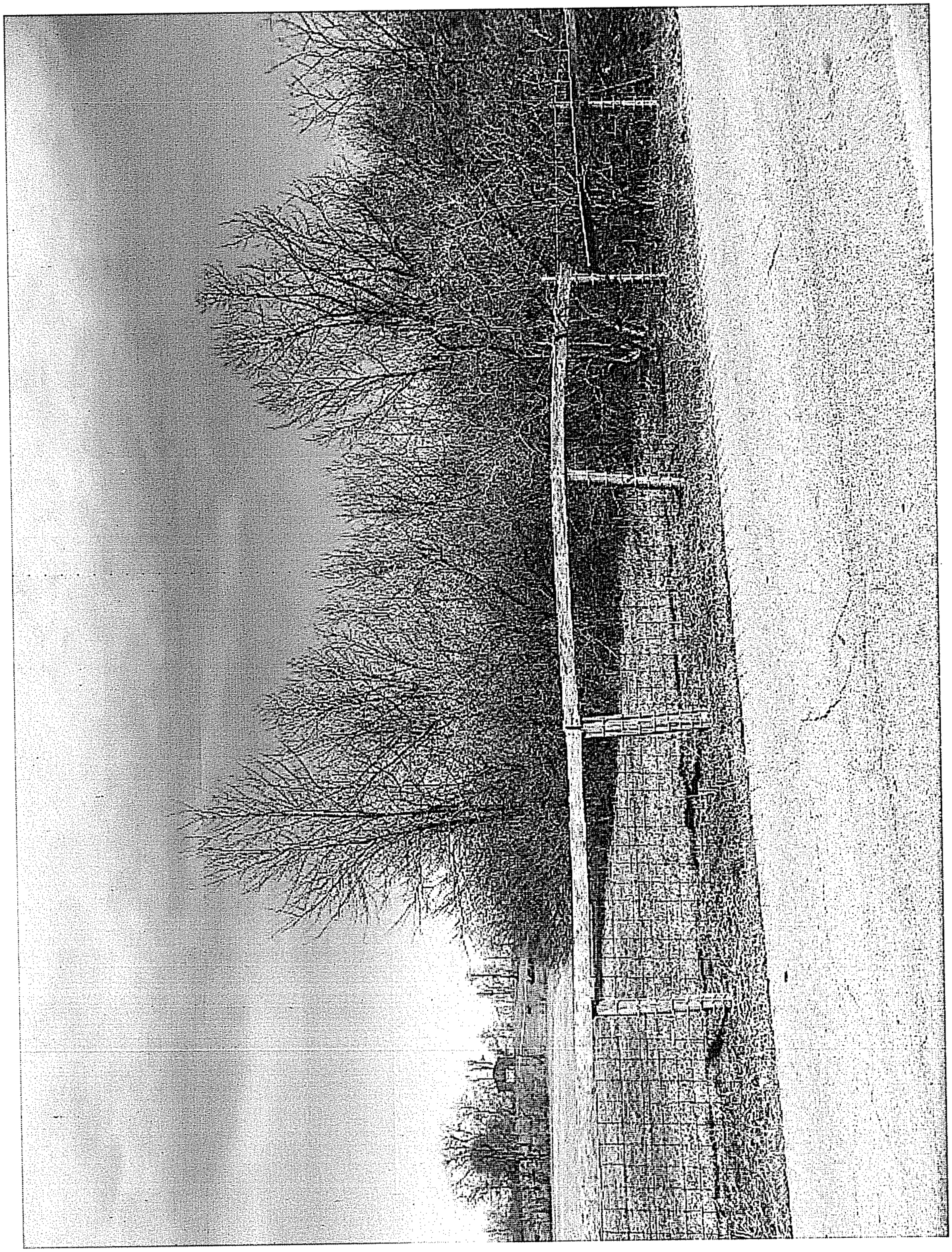


PHOTO NO. 9

(d) Again, the site is located on an existing 4-inch distribution main and would require upgrade of the existing Catnip Hill Pike main from this point to the Switzer site which would require 2,800-feet of upgrade piping.

(e) Based on the 5. Built Environment with Viewshed in the PhotoScience Siting Study, it is very probable that not only would a tower at this site be seen by the residents of Forest Hills Subdivision, but all the other subdivisions within this general area.

(f) The elevation determined in this study and as listed in 15.Statistics which I assume is based on the "most accurate terrain map of Jessamine County that has ever been created", indicates the elevation of the site as being 1,066-feet. Review of the USGS Quad of this area indicates that the elevation of the proposed site is closer to 1,000-feet or at best since it is indicated at the edge of the sink-hole at 1,010-feet. Certainly not 1,066-feet. For purposes of cost evaluation, this report will use an elevation of 1,000-feet.

#13. Site G.

(a) This proposed site is located in the southwesterly corner of the Juanita H. Baker Farm which is located in the southeasterly quadrant of the intersection of Rhineheimer Lane and Catnip Hill Pike.

(b) As shown by the existing watermain that traverses the southerly portion of the farm, Ms. Baker has granted an easement to the Jessamine-South Elkhorn Water District for construction of a distribution main. However, this is not indicative of the fact that she would be willing to sell a one-acre tank site.

(c) Regardless of whether or not the tank site would be available, it should be noted that based on the elevation of 986-feet as shown on the statistics chart, that this would require an additional 37-feet of leg height in order to construct a usable tank on this site which would be costly as discussed below.

(d) Although the preliminary estimate for the extension of the 8-legs is $12,000/vertical foot, this was based on a range of elevation from 1-10 feet. Consequently, with a greater height of 37-feet the cost would be substantially greater due to the fact of increased stability and strength due to the increased height. However, this report will utilize the $12,000/vertical foot. Using this conservative unit price, construction of a tank at this site would require an additional $444,000, just for the increased length of the tank legs.

(e) Although the tank site is located adjacent to existing mains, they are 4-inch and 6-inch in size and consequently will require upgrade from the site northerly to the existing 12-inch main at the Switzer tanks site, a distance of 3,000-feet.

#14. Site H.

(a) This site is located in the southerly portion of a farm owned by Sarah Katherine Ramsey who is the wife of Ken Ramsey and together they own and operate The Ramsey Farm which is a thoroughbred racing operation consisting of several thousand acres.

(b) Mr. Ramsey was approached during the evaluation of tank sites that was conducted in 2004 and was not receptive to granting a tank site on another portion of his farm.

(c) The location suggested here is northerly of Veterinary Drive which is a county road that connects Old US-68 and Relocated US-68. Consequently, access to this site would be no problem. Although the PhotoScience Siting Study indicates a 143-feet.

(d) However, it would require construction of 1,500-feet of piping to connect the existing mains located on Barbaro Lane (Old US-68) and Relocated US-68 in order to provide adequate service to the proposed tank.

(e) It should be noted that the proposed tank site is adjacent to an existing electrical substation and consequently it may be in violation of the electrical and safety codes.

(f) The table 15.Statistic lists residences within viewshed as 9. However, the study is remiss in not noting that the proposed tank at Site H would be within approximately 100-feet of US-68, a four-lane highway having an ADT count of 15,593$_{(a)}$ VPD, which would offer a completely unobstructed view of the entire tank. (See Photo 10) This huge number of viewers would certainly skew the hypothesis of, **"an important concern of the public is siting the tank in an area that has the least visual impact to the community."** (emphasis added).

$_{(a)}$ 15,593(08) STA 750, KYTC Traffic Station Counts, Nicholasville, Jessamine County, Kentucky, July 2011.

(g) Regardless of the other factors mentioned, this site has an elevation of 987-feet which would require a lengthening of the legs of the tank by 36-feet. As previously discussed in Site G, this would be prohibitive from a cost standpoint.

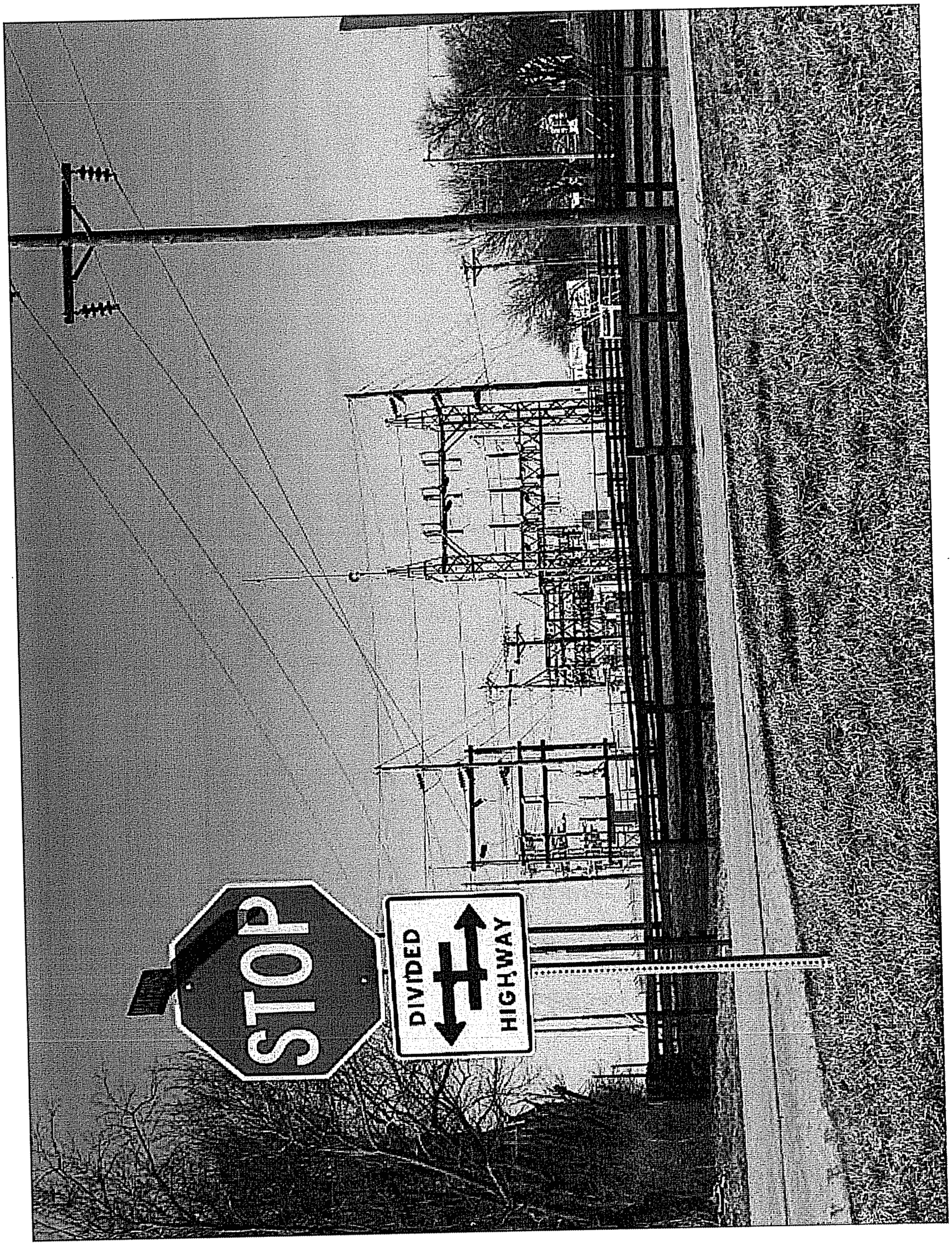


PHOTO NO. 10

CONCLUSIONS

The PhotoScience Water Tank Siting Study states that it uses the same detailed and rigorous methodology that is inherent to and contained within the EPRI-GTD Overhead Electric Transmission Line Siting Methodology, when in fact the method employed is a cursory evaluation of siting that is almost solely viewshed driven. The study is rife with errors, mistakes, void of applicable engineering principles, and in the final analysis does not proffer a concluding answer. Following is a listing of some factors that demonstrate this opinion.

- Sites were proposed near future projects that did not exist.
- The proposed sites were not evaluated in conjunction with the other two (2) existing tanks.
- <u>2. Engineering Criteria</u> section contains numerous errors.
  - Future projects which did not exist.
  - Springs indicated in wrong locations.
  - Wells and springs not shown.
  - Incorrect base elevation.
  - Incorrect pipe size indicated.
  - District boundary omitted.
- Study disregarded availability of site acquisition.
- Disregards flow availability at proposed alternates.
- PhotoScience Siting Study does not consider any costing relative to existing Switzer site.

- The PhotoScience Siting Study and proposed alternates do not reflect the consideration of even the most basic engineering hydraulic design principles.
- The PhotoScience Siting Study appears to be totally viewshed driven.
- 8. Site B (Brown Site) visibility map is in error. There are several points on the non-red areas from which the tank is visible (i.e., Photos 4, 5, & 6).
- A basic principle of the EPRI-GTC methodology is to combine all databases into a composite map. The PhotoScience Siting Study did not combine all existing and alternate site viewshed mapping; therefore it was not able to indicate a tank site area that would not have a visible tank.
- Winter opacity was not considered in the viewshed limits determination.
- The PhotoScience Siting Study stated, "an important concern of the public is siting the tank in an area that has the least visual impact to the community". Then proposing to locate two (2) sites (Sites B and H) adjacent to a four-lane divided highway having an average daily traffic count (ADT) of 15,593 vehicles per day (VPD).

In conclusion, this report has demonstrated that the PhotoScience Siting Study does not contain one scintilla of the EPRI-GTC Overhead Electric Transmission Line Methodology, is not based on sound engineering principles and methodology or cost evaluation, and did not conclude with a recommended alternative site. In contrast, application of these evaluations basics to the alternates proposed by PhotoScience Siting Study demonstrates that the Proposed Switzer Site is the most obvious and desirable location for the proposed 1.0 MG elevated storage tank.

APPENDIX A

Kentucky Infrastructure Authority

Proposed Project Website

January 7, 2013

KIA > WRIS > WRIS Portal > **Project Data**

Reload < Click here to reload the last saved version of this page.

User Login: Password: **Login**

WRIS Project Data

Search the WRIS for drinking water or waste water projects by entering any combination of the following fields:

Regulatory Framework: Safe Drinking Water Act (Water)
Area Development District: Bluegrass View Map
Legislative District:
Planning Unit:
Primary County:
Project Status:
Funding Source:
Funding Status:
Applicant: Jessamine-South Elkhorn Water District
Project Administrator:
Project Engineer:
Project Engineering Firm:
Project Number*:
DOW Permit ID*:
Project Title*:

Clear Query **Submit Query**

* Indicates a fuzzy search will be performed on these fields.

Legislative District Options	
District Type:	Sort Option:
◉ Kentucky House	◉ By District Number
○ Kentucky Senate	○ By Legislator
○ Congressional	

Download CWSRF Guidance Document
Download DWSRF Guidance Document

Download Clean Water Pre-Application Form
Download Drinking Water Pre-Application Form

7 records found. Click here to view results.

7 records found.

Download PDF **Download Excel**

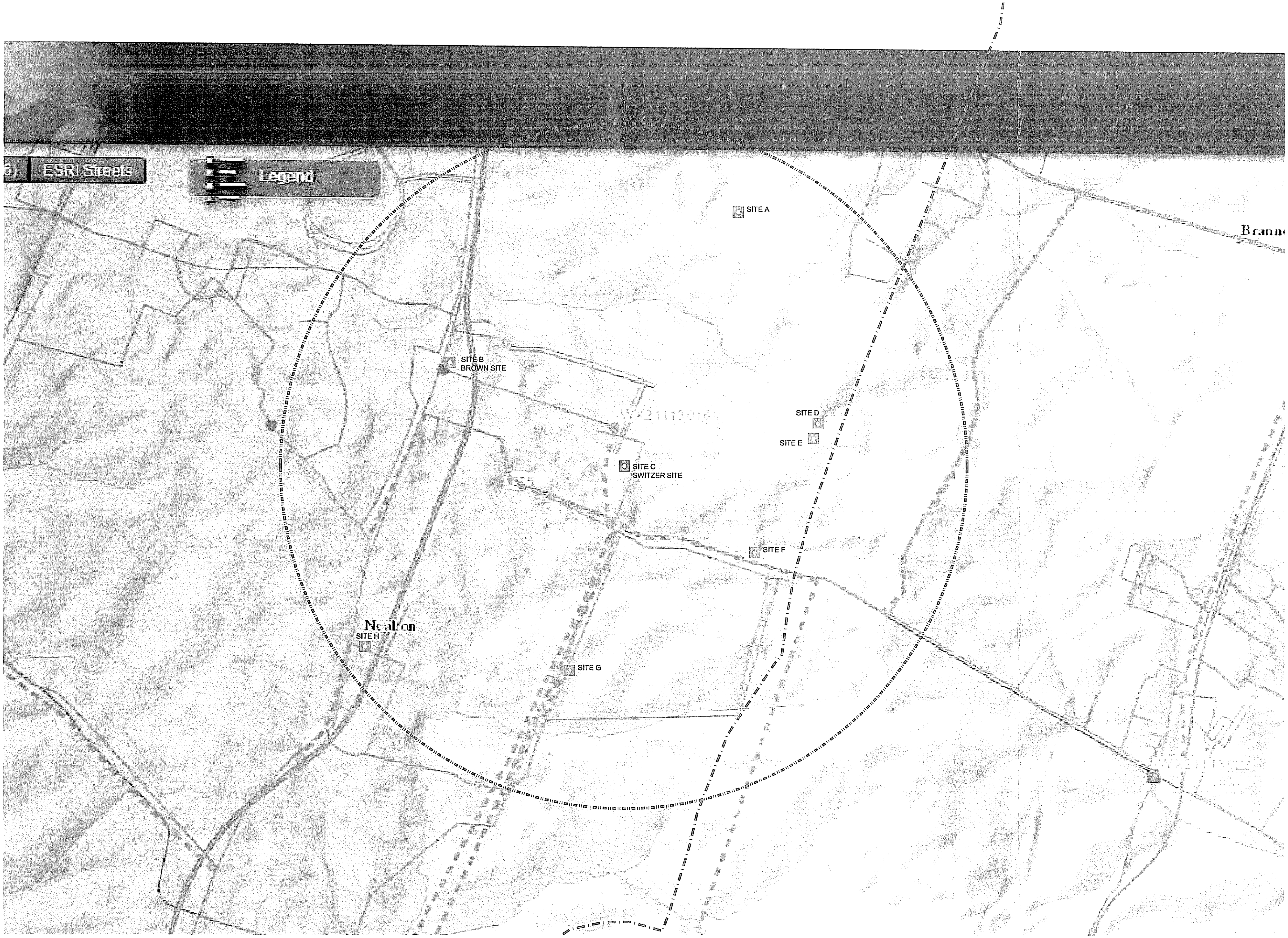
PNUM	Applicant	Project Status	Funding Status	Schedule (yrs)	Project Cost	Project Title	Primary County	Profile Modified	GIS Modified
WX21113001	Jessamine-South Elkhorn Water District	Constructed	Fully Funded	Constructed	$1,750,000	Keene Reconstruction & Northwest Hydraulic Reinforcement	Jessamine	12-07-2010	08-02-2010

WX21113004	Jessamine-South Elkhorn Water District	Constructed	Partially Funded	Constructed	$1,600,000	Southeast Rural Jessamine Unserved Areas	Jessamine	12-07-2010	08-02-2010
WX21113016	Jessamine-South Elkhorn Water District	Approved	Partially Funded	0-2 Years	$2,192,000	Catnip Hill Pike 1.0 MG Elevated Storage Tank	Jessamine	11-05-2012	08-02-2010
WX21113029	Jessamine-South Elkhorn Water District	Approved	Not Funded	0-2 Years	$3,025,300	Jessamine S. Elkhorn Northwest Watermain Replacement and Hydraulic Looping	Jessamine	11-27-2012	12-04-2012
WX21113031	Jessamine-South Elkhorn Water District	Approved	Not Funded	0-2 Years	$709,000	Fort Bramlett/Camp Nelson Waterline Extension	Jessamine	12-02-2012	12-27-2010
WX21113036	Jessamine-South Elkhorn Water District	Approved	Not Funded	3-5 Years	$125,000	Water Asset Management and Cost of Services Survey Jessamine South Elkhorn	Jessamine	02-22-2012	09-21-2010
WX21113038	Jessamine-South Elkhorn Water District	Under Construction	Partially Funded	0-2 Years	$623,531	Jessamine - South Elkhorn Water District - Southeast Rural Jessa	Jessamine	03-06-2012	09-07-2010

Back to top

Reload < Click here to reload the last saved version of this page.

Contact Us | Site Map
Privacy | Security | Disclaimer | Accessibility Statement



GRAPHIC SCALE: 1" = 800'
0 800 1600 2400

LEGEND

STUDY AREA OF PROPOSED TANK SITE (1.25 MILE RADIUS)

DISTRICT BOUNDARY

PROPOSED TANK SITE

ALTERNATE TANK SITES

):\SCCESWORK\WO3569\PVA MAPPING.dwg, 1/11/2013 7:53:03 AM

APPENDIX B

Composite Map of Study Sites

January 9, 2013

GRAPHIC SCALE: 1" = 800'

0 800 1600 2400

LEGEND

STUDY AREA OF PROPOSED TANK SITE (1.25 MILE RADIUS)

DISTRICT BOUNDARY

STUDY AREA OF PROPOSED TANK SITE (0.5 MILE RADIUS)

PROPOSED TANK SITE

STUDY AREA OF ALTERNATE TANK SITES (0.5 MILE RADIUS)

ALTERNATE TANK SITES

--WATERLINES--

2", 3" ORANGE
4" GREEN
6" RED
8" MAGENTA
10" CYAN
12" BLUE

summary ranking based on matric value with the most obvious winner being the proposed Switzer site.

	Site A	Site B	Site C	Site D	Site E	Site F	Site G	Site H
% in viewshed	**0**	**65**	**62**	**83**	**75**	**60**	**100**	**56**
Piping	**165**	**4**	**0**	**90**	**78**	**8**	**3**	**6**
Pipe upgrade	**0**	**0**	**0**	**126**	**126**	**126**	**135**	**68**
Access Road	**102**	**0**	**0**	**116**	**128**	**7**	**0**	**0**
Leg height	**60**	**24**	**0**	**-168**	**-120**	**276**	**444**	**432**
Others	**15**	**15**	**0**	**15**	**15**	**15**	**15**	**15**
Land	**40**	**40**	**0**	**40**	**40**	**40**	**40**	**40**
TOTAL	**382**	**144**	**62**	**302**	**342**	**532**	**737**	**617**

	Matrix Ranking	Cost Differential	Matrix Value
#1	Site C (Switzer)	-0-	62
#2	Site B (Brown)	$82,850	144
#3	Site D (Strohl)	$217,970	302
#4	Site E (McMillen)	$266,570	342

JSEWD EXHIBIT 9

EXHIBIT
JSEWD-HORNE 4

Water Usage Northwest Area Jessamine-South Elkhorn Water District August 2011 to July 2012					
Month	Monthly Use Total (gallons)	Avg. Monthly Daily Use (gallons)	No. Days Use Exceeds 550,000 gallons	Maximum Day Use (gallons)	Minimum Day Use (gallons)
Aug - 11	28,070,250	905,490	31	1,256,250	600,750
Sept - 11	21,536,550	717,885	26	1,229,625	487,500
Oct - 11	18,727,125	604,100	22	858,750	450,000
Nov - 11	15,238,800	507,960	7	1,261,125	338,625
Dec - 11	16,473,750	531,410	11	690,000	426,750
Jan - 12	17,254,050	556,580	20	606,000	476,625
Feb - 12	15,577,425	537,150	11	700,875	402,125
Mar - 12	15,700,725	506,475	5	618,000	450,000
Apr - 12	17,035,575	567,850	15	883,500	305,250
May - 12	26,100,750	841,960	30	1,661,250	351,000
Jun - 12	33,467,700	1,115,590	29	1,693,125	540,700
Jul - 12	34,382,550	1,109,110	31	1,929,375	679,250
	(1) 259,565,250		238 (2)		

(1) Average Annual Daily Use = 709,2000 gallons (259,565,250 ÷ 366)

(2) Annual Percentage, Days Exceed 550,000 gallons = 65%

The current constructed storage in the District is 550,000 gallons. The average annual daily use is 709,200 gallons and the max/min average monthly daily use ranges from 1,115,590 gallons (Jun-12) to 506,475 gallons (Mar - 12). Ten of the past twelve months have monthly average daily use that exceeds the available 550,000 gallon storage. In July 2012, there were fourteen (14) days that demand exceeded 1.0 MGD and every day exceeded the available storage. However, to date the District has been able to maintain flows and pressure through judicious pumping and system management. But in order to meet 807 KAR 5:066, Section 4(4) will require the District to construct additional storage in order to safeguard the health and welfare of its present and future customers.

Q:\ProjectDir\Jsewd\WO3569\ProjectNarrativeWithTable.wpd

EXHIBIT

JSEWD-HORNE 5

JSEWD EXHIBIT 10

Jessamine-South Elkhorn Water District

<u>**Information Request No. 10**</u>: Refer to JSEWD's response to Information Request No. 18 of the Intervenors' First Set of Requests for Information. Please provide the expected or estimated construction costs associated with a 500,000 gallon tank

<u>Answer:</u> JSEWD objects to the unsupported allegation implied in this question that a 500,000 gallon tank should be imposed by the PSC in this proceeding. Notwithstanding the objection, the cost reduction of downsizing a 1,000,000 gallon tank by 50% (i.e., to a 500,000 gallon size) would be approximately 18% of the current bid (i.e.; $299,700).

1,000,000 gallon tank	**$1,624,700**
500,000 gallon tank	**<u>$1,325,000</u>**
Difference	**$ 299,700**

Conversely, in order to gain 100% increase in volume from 500,000 gallons to 1,000,000 gallons would only require an increase of 23% in cost. This equates to a 4.3:1 cost benefit ratio, which certainly seems to be very desirable.

Viewed in another way, if two (2) 500,000 gallon tanks were constructed sequentially, and negating any inflation value, the cost of 1,000,000 gallon storage would be $2,650,000 or $1,025,300 more than a single 1,000,000 gallon tank. Based on this reasoning, the construction of one million gallon tank versus two one-half million gallon tanks would be the least cost solution.

[Witness: Counsel and John G. Horne]

EXHIBIT
tabbies
JSEWD-HORNE 6

JSEWD EXHIBIT 11

EXHIBIT
JSEWD-HORNE 7

Maximum Daily Demand (GPD)
2001 - 2012

Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)
08/25/01	1,160,400	* 09/08/02	1,732,500	08/26/05	1,132,875	06/22/07	1,236,375	09/04/07	1,371,000	07/12/08	1,207,500
06/22/02	1,053,975	09/09/02	1,068,750	08/27/05	1,119,750	06/23/07	1,098,750	09/05/07	1,420,125	07/17/08	1,209,750
06/24/02	1,059,765	09/10/02	1,140,000	09/24/05	1,078,500	06/25/07	1,117,125	09/06/07	1,535,250	07/22/08	1,084,500
06/26/02	1,269,225	09/11/02	1,308,750	07/02/06	1,113,750	06/28/07	1,173,000	09/07/07	1,447,875	07/23/08	1,270,875
07/02/02	1,177,500	08/18/04	1,122,750	07/04/06	1,172,250	07/02/07	1,186,875	09/08/07	1,229,625	07/26/08	1,469,625
07/04/02	1,230,000	06/06/05	1,275,875	07/19/06	1,160,625	07/03/07	1,159,875	* 09/09/07	1,704,375	07/28/08	1,322,100
07/15/02	1,125,000	06/16/05	1,147,875	07/31/06	1,088,625	07/04/07	1,228,500	09/14/07	1,141,875	08/02/08	1,173,000
07/06/02	1,087,500	06/18/05	1,193,250	* 08/02/06	1,534,500	07/09/07	1,185,000	09/16/07	1,514,625	08/09/08	1,067,250
07/07/02	1,275,000	06/25/05	1,079,625	08/03/06	1,161,000	07/10/07	1,131,750	09/19/07	1,426,500	08/12/08	111,875
07/08/02	1,267,500	06/26/05	1,114,125	08/04/06	1,245,000	07/13/07	1,096,875	09/20/07	1,208,250	08/13/08	1,116,750
07/09/02	1,312,500	06/27/05	1,325,250	* 08/06/06	1,571,250	07/15/07	1,101,375	09/21/07	1,417,875	08/15/08	1,087,575
07/10/02	1,177,500	06/28/05	1,127,250	08/07/06	1,459,500	07/16/07	1,318,125	09/22/07	1,232,250	08/16/08	1,116,000
07/11/02	1,260,000	07/01/05	1,114,125	08/09/06	1,109,250	07/18/07	1,057,500	* 09/23/07	1,593,000	08/17/08	1,334,625
07/12/02	1,451,250	* 07/03/05	1,511,250	08/19/06	1,178,625	08/03/07	1,203,000	09/24/07	1,435,500	08/18/08	1,330,875
07/13/02	1,207,500	07/04/05	1,120,500	05/16/07	1,086,375	08/06/07	1,079,625	09/25/07	1,294,875	08/19/08	1,309,875
07/15/02	1,179,000	07/06/05	1,124,250	05/21/07	1,090,600	08/07/07	1,235,625	09/26/07	1,215,750	08/20/08	1,419,000
07/17/02	1,320,000	07/07/05	1,119,300	05/24/07	1,270,875	08/09/07	1,115,625	09/27/07	1,427,625	08/21/08	1,494,375
07/18/02	1,177,500	07/08/05	1,154,700	05/25/07	1,339,600	* 08/10/07	1,638,375	10/02/07	1,134,000	08/22/08	1,475,625
07/21/02	1,342,500	* 07/10/05	1,521,000	05/26/07	1,186,500	08/11/07	1,218,375	10/03/07	1,416,750	08/23/08	1,484,625
07/22/02	1,312,500	07/30/05	1,103,250	* 05/27/07	1,572,375	08/12/07	1,337,250	10/04/07	1,547,250	08/24/08	1,420,125
07/24/02	1,413,450	08/01/05	1,063,125	05/28/07	1,161,375	* 08/13/07	1,655,625	10/05/07	1,297,500	08/25/08	1,517,250
07/25/02	1,245,000	08/02/05	1,228,125	05/29/07	1,426,500	08/14/07	1,513,500	10/06/07	1,103,625	08/30/08	1,080,750
07/26/02	1,447,500	08/03/05	1,311,750	05/30/07	1,411,125	* 08/15/07	1,550,250	10/07/07	1,161,375	08/31/08	1,242,000
07/27/02	1,110,000	08/04/05	1,366,125	* 05/31/07	1,530,375	* 08/16/07	1,653,000	10/08/07	1,103,250	09/01/08	1,261,500
07/28/02	1,256,250	* 08/05/05	1,560,000	06/01/07	1,441,125	08/17/07	1,236,375	10/09/07	1,074,000	09/02/08	1,413,000
* 07/29/02	1,627,500	08/07/05	1,054,125	06/02/07	1,262,625	08/18/07	1,364,250	10/12/07	1,107,375	09/03/08	1,413,000
07/30/02	1,346,250	08/08/05	1,152,500	06/03/07	1,350,750	08/19/07	1,487,250	10/15/07	1,289,625	* 09/04/08	1,791,375
08/01/02	1,091,250	08/09/05	1,216,125	06/04/07	1,119,750	08/20/07	1,548,750	05/26/08	1,213,875	09/05/08	1,370,250
08/02/02	1,286,250	08/10/05	1,225,125	06/10/07	1,211,500	08/21/07	1,093,875	05/30/08	1,149,750	09/06/08	1,201,875
08/03/02	1,170,000	08/11/05	1,400,625	06/11/07	1,172,625	08/22/07	1,070,625	06/01/08	1,189,350	09/09/08	1,097,625
* 08/04/02	1,691,250	08/12/05	1,319,250	06/12/07	1,078,500	08/24/12	1,457,625	06/07/08	1,142,250	09/10/08	1,168,500
08/06/02	1,068,750	08/13/05	1,327,875	06/13/07	1,228,125	08/25/12	1,337,250	06/08/08	1,263,375	09/17/08	1,357,500
08/07/02	1,087,500	08/14/05	1,090,875	06/14/07	1,224,750	08/26/12	1,530,375	06/09/08	1,411,500	* 09/18/08	1,619,250
08/08/02	1,338,750	08/15/05	1,120,500	* 06/15/07	1,564,875	08/28/07	1,147,125	06/13/08	1,206,000	09/20/08	1,389,750
08/10/02	1,237,500	08/16/05	1,063,125	* 06/16/07	1,578,000	08/29/07	1,235,250	06/20/08	1,182,000	* 09/21/08	1,959,750
08/11/02	1,218,750	08/22/05	1,081,125	* 06/17/07	1,541,250	08/30/07	1,187,250	06/24/08	1,050,000	09/23/08	1,161,750
08/12/02	1,335,000	08/23/05	1,103,625	06/18/07	1,464,000	09/01/07	1,377,000	06/26/08	1,431,000	* 09/24/08	1,640,625
08/13/02	1,166,250	08/24/05	1,060,875	06/19/07	1,107,750	09/02/12	1,221,375	07/03/08	1,370,250	09/25/08	1,251,750
08/14/02	1,095,000	08/25/05	1,159,500	06/21/07	1,179,375	09/03/12	1,060,500	07/09/08	1,064,625	* 09/26/08	1,576,125

JSEWD EXHIBIT 12

Maximum Daily Demand (GPD)
2001 - 2012

Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)	Date	Demand (GPD)
09/27/08	1,291,875	08/31/10	1,167,375	07/27/11	1,094,250	07/10/12	1,145,250
09/28/08	1,276,125	09/01/10	1,104,000	07/29/11	1,197,375	* 07/11/12	1,559,250
09/29/08	1,153,875	09/02/10	1,423,875	07/30/11	1,204,875	07/13/12	1,173,000
09/30/08	1,340,625	09/05/10	1,312,500	08/01/11	1,056,000	08/02/12	1,215,375
10/04/08	1,064,750	09/06/10	1,356,750	08/02/11	1,091,250	08/08/12	1,081,875
10/05/08	1,176,000	09/07/10	1,099,125	08/03/11	1,184,250	08/13/12	1,054,875
10/06/08	1,215,375	09/10/10	1,168,125	08/06/11	1,256,250	08/19/12	1,152,750
10/07/08	1,461,750	09/12/10	1,147,500	08/29/11	1,064,250	08/25/12	1,126,875
10/14/08	1,115,250	09/13/10	1,095,375	09/01/11	1,086,375	08/26/12	1,097,625
10/16/08	1,282,500	09/15/10	1,141,875	09/02/11	1,229,625	08/27/12	1,098,350
05/25/09	1,202,625	09/19/10	1,104,000	09/03/11	1,135,500	08/31/12	1,077,375
06/01/09	1,076,250	09/20/10	1,249,875	09/04/11	1,258,125	* 09/02/12	1,718,625
06/02/09	1,192,875	09/22/10	1,158,750	05/26/12	1,655,250	10/15/12	1,169,250
06/07/09	1,520,250	09/24/10	1,198,500	05/28/12	1,185,750		
06/10/09	1,162,875	10/01/10	1,224,750	05/29/12	1,271,250		
06/22/09	1,096,875	10/08/10	1,176,750	06/08/12	1,117,500		
06/24/09	1,076,625	10/11/10	1,299,500	06/09/12	1,172,250		
07/04/09	1,131,375	10/18/10	1,122,375	06/10/12	1,214,625		
07/09/09	1,158,375	10/22/10	1,063,875	06/16/12	1,199,625		
07/10/09	1,093,125	10/24/10	1,138,125	06/17/12	1,172,625		
07/13/09	1,055,250	05/30/11	1,175,250	06/20/12	1,157,625		
07/14/09	1,301,250	06/06/11	1,339,575	06/21/12	1,348,500		
07/20/09	1,201,125	06/07/11	1,219,875	06/22/12	1,595,250		
09/07/09	1,152,750	06/08/11	1,465,125	06/23/12	1,336,875		
* 09/12/09	1,671,000	06/09/11	1,370,250	06/24/12	1,362,000		
06/09/10	1,137,375	06/11/11	1,103,625	* 06/25/12	1,550,250		
06/27/10	1,237,350	06/12/11	1,218,750	06/26/12	1,276,875		
06/30/10	1,055,625	* 06/13/11	1,638,750	06/27/12	1,510,500		
* 07/06/10	1,784,250	07/01/11	1,410,375	06/28/12	1,512,000		
07/08/10	1,392,375	07/02/11	1,296,000	* 06/29/12	1,693,125		
07/09/10	1,378,125	07/03/11	1,249,500	* 06/30/12	1,581,000		
08/06/10	1,250,250	07/05/11	1,289,250	* 07/01/12	1,929,375		
08/07/10	1,537,500	07/06/11	1,178,250	07/02/12	1,510,875		
08/10/10	1,308,875	07/08/11	1,103,250	* 07/03/12	1,777,500		
08/11/10	1,440,000	07/12/11	1,322,250	* 07/04/12	1,601,625		
08/13/10	1,256,250	07/16/11	1,095,375	07/05/12	1,339,875		
08/14/10	1,436,250	07/21/11	1,103,625	* 07/06/12	1,576,125		
08/24/10	1,160,625	07/22/11	1,288,500	* 07/07/12	1,667,250		
08/28/10	1,072,125	07/23/11	1,230,750	* 07/08/12	1,806,000		
08/30/10	1,375,500	07/24/11	1,301,750	07/09/12	1,197,375		

QUALIFICATIONS OF THE APPRAISER

William L. Berkley, Jr.

Professional Affiliations:

- General Certification - Kentucky Real Estate Appraisers Board No.721.

- MAI Candidate of the Appraisal Institute.
  Candidate No: M90-0111.
  Past Treasurer & Secretary - Bluegrass Chapter of Appraisal Institute

- Licensed Real Estate Broker in the State of Kentucky

- Member of the International Right of Way Association

- Member LFUCG Planning Commission

Education:

- Graduated: University of Kentucky,
  BS in Business Administration, Finance Major.
  Courses include Real Estate Principles, Real Estate Finance, Independent Study in Real Estate, Statistical Inference, Statistical Probability.

- Graduated: Lexington Community College,
  Associate of Applied Science, Real Estate Major.
  Courses include Real Estate Appraisal, Real Estate Principles, Real Estate Marketing I & II, Real Estate Law, Real Estate Finance, Real Estate Investment, Real Estate Property Management.

- Course work through the Appraisal Institute: Real Estate Appraisal Principles, Capitalization A, Capitalization B, Advanced Applications, Report Writing and Valuation Analysis, Uniform Standards of Professional Practice, Fundamentals of Rural Appraisal.

- Seminars through the Appraisal Institute: Uniform Standards for Federal Land Acquisition, USPAP Update, Site to Due Business, Attacking & Defending an Appraisal for Litigation, Appraisal Practices for Litigation, Easement Valuation, Subdivision Analysis, Understanding Limited Appraisals, Highest and Best Use Analysis, Dynamics of Office Building Valuation, Money Market, Appraising From Blueprints and Specifications, Reviewing Appraisals, Evaluating Residential Construction, Survey Research Techniques, Appraising Troubled Properties, Applied Sales Comparison Approach, Appraisal Regulations of the Federal Banking Agencies, Farm Valuation, Accrued Depreciation, Cash Equivalency, Rates, Ratios & Reasonableness.

JSEWD EXHIBIT 13

EXHIBIT
tabbies
JSEWD-BERKLEY 2

Experience:

Full time career in appraising commercial, industrial, multi-family, subdivisions, easement, condemnation, conservation easements, farm and multi-family residential properties. Owner and manager of investment property.

RECENT APPRAISAL CLIENTS:

Financial Institutions:

Fifth Third Bank, Traditional Bank, BB&T, Integra Bank, PNC Bank, Huntington National Bank, Bank of Kentucky, Heritage Bank, Central Bank & Trust Company, Bank One (JP Morgan Chase). Non-bank lender clients include; Law firm of White, Peck & Carrington; Law firm of Greenebaum, Doll & McDonald; Law Firm of Stoll, Keenon & Park; Law Firm of Wethington, Hurt & Crosby; Law Firm of McBrayer, McGinnis & Kirkland; Law firm of Deters, Benzinger & Lavelle; Law Firm of Adams, Stepner, Woltermann & Dusing.

Governmental, Utilities, & Railroads:

Commonwealth of Kentucky Department of Transportation - Right of Way and Legal Departments, Commonwealth of Kentucky Real Property Division, Columbia Gas of Kentucky, Kentucky American Water Company, East Kentucky Power Cooperative, Kentucky Utilities Company, Sanitation District No.1, CSX Real Property, Norfolk Southern Railroad, United States Postal Service, General Services Administration, University of Kentucky, Morehead State University, Northern Kentucky University, Eastern Kentucky University, Lexington Fayette Urban County Government, Lexington Fayette County Airport Board.

APPRAISED FOR:

Full Range of Commercial Properties, Multi-Family Residential, Subdivision Development, General and Horse Farms, Condemnation cases for both Plaintiff and Defendant, Tax & Divorce Cases, Gas, Water & Electric Utility Companies, Kentucky Department of Highway Projects, Conservation Easements, Partition of Real Property, Urban Renewal, and Major Industrial Properties.

QUALIFIED AS EXPERT IN REAL ESTATE VALUES:

Federal Bankruptcy Court Eastern Division State of Kentucky. Testified in Bankruptcy Court.

Qualified as Expert Witness in Circuit Court. Testified in condemnation proceedings.

Review Appraiser Status – Commonwealth of Kentucky Department of Transportation

WILLIAM L. BERKLEY
BERKLEY APPRAISAL COMPANY
366 WALLER AVENUE # 203
LEXINGTON, KENTUCKY 40504
859-276-2278

GOVERNMENT, RIGHT OF WAY AND UTILITY PROJECTS

- HIGHWAY RIGHT OF WAY APPRAISAL
- LITIGATION VALUATION
- WATER LINE EASEMENT APPRAISAL
- SEWER LINE EASEMENT APPRAISAL
- GAS PIPELINE EASEMENT APPRAISAL
- POWER TRANSMISSION LINE AND POLE EASEMENT APPRAISAL
- AIRPORT CONDEMNATION & LITIGATION
- CONSERVATION EASEMENTS & PURCHASE OF DEVELOPMENT RIGHTS

GEOGRAPHIC LOCATION OF PAST PROJECTS

- CENTRAL KENTUCKY - FAYETTE, CLARK, BOURBON, SCOTT, MADISON, MERCER, JESSAMINE, GARRARD, FRANKLIN, ANDERSON, BATH & MONTGOMERY COUNTY
- NORTHERN KENTUCKY - BOONE, CAMPBELL, GRANT, KENTON, OWEN, MASON, LEWIS COUNTY
- SOUTHERN KENTUCKY – PULASKI, ROCKCASTLE, McCREARY & WHITLEY COUNTY
- EASTERN KENTUCKY - BOYD, PERRY, BELL, CLAY, HARLAN, ELLIOTT, MORGAN, KNOX & ROWAN COUNTY
- WESTERN KENTUCKY – MEADE, GRAYSON, HART, HARDIN, MARION, WASHINGTON, NELSON

GOVERNMENT, RIGHT OF WAY AND CONDEMNATION CLIENTS

- COMMONWEALTH OF KENTUCKY DEPARTMENT OF TRANSPORTATION
- COMMONWEALTH OF KENTUCKY DIVISION OF REAL PROPERTY
- UNITED STATES POSTAL SERVICE
- LEXINGTON FAYETTE URBAN COUNTY GOVERNMENT
- COLUMBIA GAS OF KENTUCKY
- LG&E/KENTUCKY UTILITIES COMPANY
- EAST KENTUCKY POWER COOPERATIVE
- KENTUCKY AMERICAN WATER COMPANY
- UNIVERSITY OF KENTUCKY
- NORTHERN KENTUCKY UNIVERSITY
- MOREHEAD STATE UNIVERSITY
- EASTERN KENTUCKY UNIVERSITY
- SANITATION DISTRICT NO.1 - NORTHERN KENTUCKY
- LAW FIRM OF WHITE, PECK, CARRINGTON & MCDONALD - MT. STERLING, KY
- LAW FIRM OF STOLL, KEENON, PARK & OGDEN - LEXINGTON, KENTUCKY
- LAW FIRM OF MCBRYAER, MCGINNIS, LESLIE & KIRKLAND
- LAW FIRM OF GREENEBAUM, DOLL AND MCDONALD
- LAW FIRM OF BROOKING, STEPHNER, WOLTERMAN AND DUSING - NORTHERN KENTUCKY
- LAW FIRM OF DETERS, BENZINGER & LAVELLE - EDGEWOOD, KY

MARKET ANALYSIS JESSAMINE/SOUTH ELKHORN WATER DISTRICT
PROPOSED WATER TANK SITE
ADJOINING FOREST HILLS SUBDIVISION
JESSAMINE COUNTY, KENTUCKY

EFFECTIVE DATE

MARCH 4, 2013

PREPARED FOR:

JESSAMINE-SOUTH ELKHORN WATER DISTRICT
802 SOUTH MAIN STREET
NICHOLASVILLE, KY 40356

PREPARED BY:

BERKLEY APPRAISAL COMPANY
366 WALLER AVENUE SUITE 203
LEXINGTON, KY 40504

JSEWD EXHIBIT 14

EXHIBIT
tabbies
JSEWD-BERKLEY 1

BERKLEY APPRAISAL COMPANY
REAL ESTATE APPRAISERS

366 Waller Avenue Suite 203 ~ Lexington, KY 40504
Phone (859) 276-2278
Commercial, Industrial, Multi-Family, Subdivision & Farms Appraisal Services

March 4, 2013

Jessamine-South Elkhorn Water District
802 South Main Street
Nicholasville, Ky 40356

RE: Proposed Water Tank Site
Jessamine South Elkhorn Water District
Adjoining Forest Hills Subdivision
Jessamine County, KY

Dear Gentlemen:

Following your request I have performed a market analysis in order to form opinions as to any diminution in the market value of real property as a result of having proximity to or being within the viewshed of the proposed elevated water storage tank.

The proposed site is located at the termination of Chinkapin Drive which is within the Forest Hills subdivision located off U.S. 68 in Jessamine County. The property was purchased by the Jessamine South Elkhorn Water District in 2004 as the location for a future elevated water storage tank. The adjoining Forest Hills subdivision was subsequently developed in 2006 and is an executive class subdivision. The Forest Hills neighbors have indicated that they were unaware of the proposed water tank until approximately June 2010 when they voiced their concerns at a public meeting of the Jessamine South Elkhorn Water District. The neighbors contend that the proposed siting of the water tank has and will continue to result in the diminution in the market value of their property.

The market analysis which has been performed has relied upon data collected from Jessamine County and specifically the Forest Hills and Harrods Ridge subdivisions as well as a storage tank site in Fayette County. The analysis which is detailed in the following report has resulted in the following conclusions;

- The decline in lot and home values within Forest Hills subdivision since June of 2010 is a result of the real estate cycle and is similar to the trends found in other competing subdivisions.

- There is no market evidence that would indicate that the proximity to or location within the viewshed of a 1.0MG elevated water storage tank would result in the diminution in the market value of property within Forest Hills subdivision.

We are pleased to provide you with our professional appraisal services. If you have any questions please do not hesitate to contact me.

Sincerely,

William L. Berkley, Jr.
Berkley Appraisal Company
Kentucky Certified General Appraiser #721

Table of Contents

PURPOSE OF THE ASSIGNMENT

The purpose of this assignment is to analyze and draw conclusions of the impact that the siting of the proposed Jessamine South Elkhorn Water District 1,000,000 gallon elevated water storage tank would have on the market value of real property located within the adjoining Forest Hills subdivision. The assignment has been carried out through an analysis of market data that has been collected from Jessamine as well as Fayette County, Kentucky.

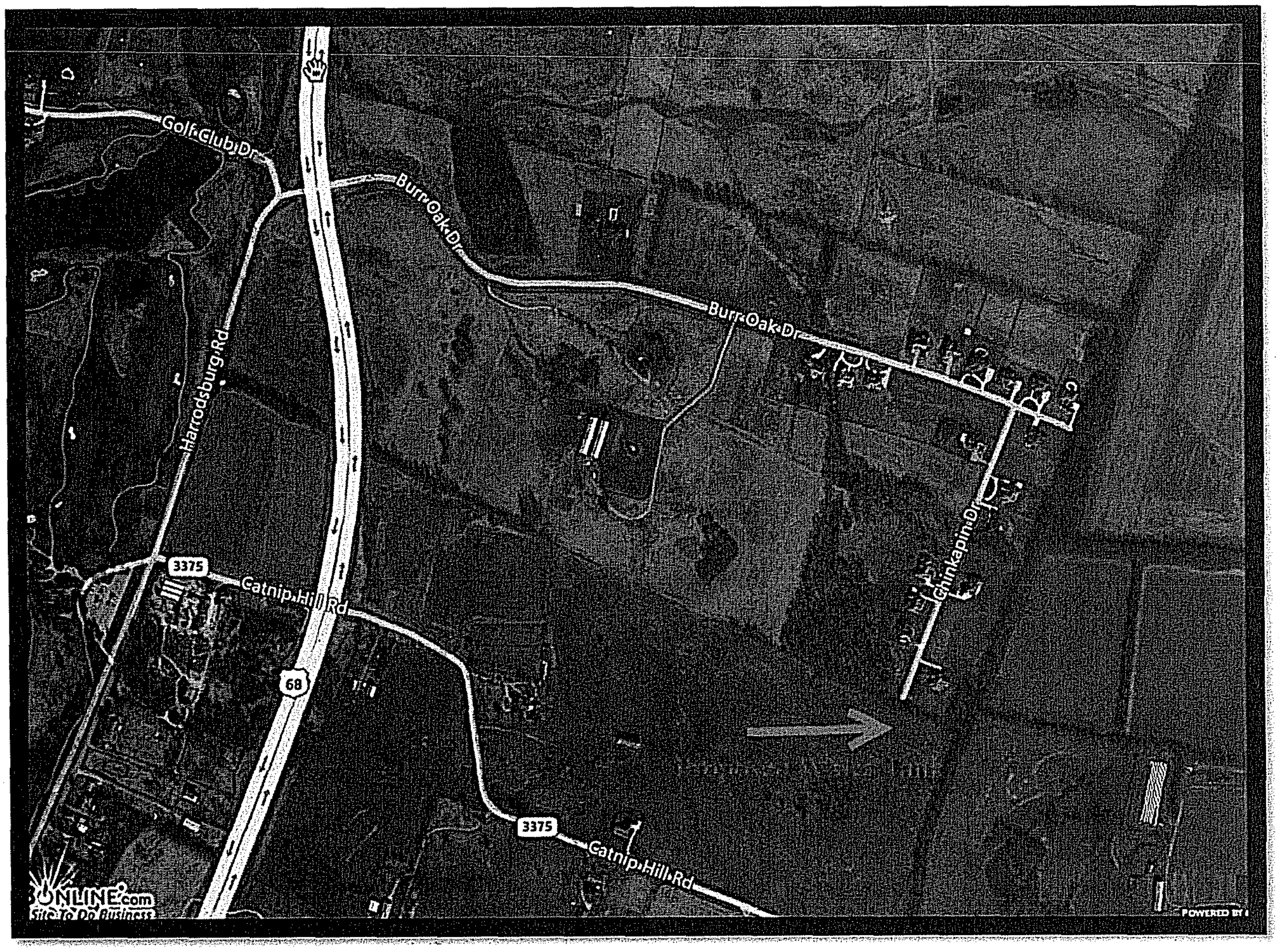
METHODOLOGY

The methodology employed relies on a comparative market analysis of sales of both lots and residential homes in order to measure any changes in market value as a result of proximity to or within the view shed of an elevated water storage tank such as the one proposed for the subject site. Market data has been collected from Forest Hills subdivision of which a portion adjoins the proposed site as well as the competing Harrods Ridge subdivision which is located directly across U.S. 68 from Forest Hills and is the location of an existing 500,000 gallon elevated tank. Additional market data has been collected from Fayette County and specifically the site of the Arboretum water tower located off Alumni Drive. The analysis which has been carried out is based upon a comparison of the market value of both lots and residential homes which are in proximity to or within the viewshed of elevated water storage tank and those which are not.

PROPOSED SITE & STORAGE TANK DESCRIPTION

The proposed site of the 1.0 MG elevated water tank is commonly referred to as the Switzer site. The 1 acre site has been owned by the Jessamine South Elkhorn Water District since May 24, 2004 when it was purchased for the location of a future elevated storage tank. The location is east of U.S. 68 and north of West Catnip Hill Road and being near the southern end of Chinkapin Drive which is within the Forest Hills subdivision and terminates near the subject. Included on the following page is an aerial photo of the proposed site.

PROPOSED LOCATION OF TANK & AERIAL OF FOREST HILLS SUBDIVISION



The proposed metal tank is to have a storage capacity of 1,000,000 gallons and supported by eight legs with a leg height of approximately 110 feet and a total height of approximately 160 feet. The diameter of the tank is to be 70'. Access to the tank site will be from the termination of Chinkapin Drive via an existing 20' easement. There is also an easement from West Catnip Hill Road which will likely be used during the construction process.

Forest Hill subdivision which adjoins the proposed site was developed in 2006 as a residential subdivision under the cluster ordinance. Located at the front of Forest Hills subdivision is an existing 50KG elevated storage tank.

View of Existing 50KG Tank @ Entrance to Forest Hills

The following is a summary of additional facts related to the subdivision.

- 33 Lots Including Residual Tract (32 Buildable Lots) Developed in 2006
- 25 Existing Homes & 2 Under Construction
- Average Home is 8,170 Square Feet & Custom
- The 2013 Average Assessment is $842,369 For Homes

Typical Home Within Forest Hills

As with most upper end residential subdivisions in this portion of Jessamine County, the housing bubble has had a negative effect on home and lot values within Forest Hills with the average home sale price being $672,803 in 2012 versus $720,000 in 2011, $830,000 in 2010, $1,058,200 in 2009, $919,991 in 2008 and $995,123 in 2007. When the residential lots were originally sold by the developer beginning in 2006 the price was $170,000. In 2012 there was a total of 7 lots which sold for an average of $95,635. However, it is noted that four of the lot sales were a result of bank liquidations which also clearly had an effect on the price of the three private sales within the subdivision. This is in comparison to the average lot price in 2009 of $151,667, the 2007 average of $177,346 and the 2006 average of $170,385. It is noted that no lot sales occurred in 2008, 2010 or 2011. The tables on the following pages detail the lots and house sales which have taken place in Forest Hills subdivision and which are considered for analysis.

FOREST HILLS HOME SALES SORTED BY YEAR										
Address	**Seller**	**Buyer**	**Date of Sale**	**Price**	**DB-Pg**	**SF**	**BR**	**BA**	**1/2 BA**	**$/SF**
622 Burr Oak Dr	Gale Property Management	Alex & Tanya Krueger	11/20/2012	$ 718,500	679-191	NA				NA
708 Chinkapin	Gale Property Management	Victor & Susan Hahn English	10/31/2012	$ 627,105	679-54	NA				NA
			AVERAGE	**$ 672,803**						
612 Burr Oak Dr.	Kerley K. Investments	David & Erika Rohde	11/23/2011	$ 635,000	661-582	3875	4	3	1	$163.87
709 Chinkapin	Dale & Kim Absher	Vivek & Vidya Rangneker	3/28/2011	$ 805,000	651-407	5249	6	6	2	$153.36
			AVERAGE	**$ 720,000**						**$158.62**
631 Burr Oak Dr	Citizens Commerce National Bank	James & Suzanne Elliott	4/9/2010	$ 775,000	636-392	4745	4	3	1	$163.33
635 Burr Oak Dr	McDonald Builders, Inc	ALTAKY, llc	2/24/2010	$ 885,000	635-72	4645	5	5	1	$190.53
			AVERAGE	**$ 830,000**						**$176.93**
631 Burr Oak Dr	Perry Real Estate & Appraising, Inc	Citizens Commerce National Bank	12/23/2009	$ 971,000	633-1	4745	4	3	1	$204.64
728 Chinkapin	MKM Capital, llc	Jeremy Stanley	8/17/2009	$ 705,000	625-62	4310	5	3	1	$163.57
604 Burr Oak Dr.	Landsdowne Properties, Inc	Gery & Lisa Tomassoni	7/30/2009	$ 1,495,000	623-709	5475	4	4	0	$273.06
639 Burr Oak Dr	Eric & Amy Lancaster	Adel & Manal SFAR	7/30/2009	$ 855,000	625-77	5298	4	3	1	$161.38
619 Burr Oak Dr	Billy Clyde Gillispie	Malik Hammad & Nuzhat Naqvi	7/10/2009	$ 1,265,000	622-605	7787	5	5	0	$162.45
			AVERAGE	**$ 1,058,200**						**$193.02**
721 Chinkapin	DLM Business Ventures, Inc	Timothy & Kandy Crabbe	10/3/2008	$ 810,000	610-37	4367	4	4	1	$185.48
720 Chinkapin	DLM Business Ventures, Inc	Marlene & George Helm	8/11/2008	$ 809,243	607-229	4733	3	4	1	$170.98
709 Chinkapin	Jonathan Isaacs	Dale & Kim Absher	2/27/2008	$ 1,185,802	598-46	5249	6	6	2	$225.91
733 Chinkapin	Dale Marshall	Donald & Carol Douglas	2/8/2008	$ 874,917	597-209	4695	4	3	1	$186.35
			AVERAGE	**$ 919,991**						**$192.18**
704 Chinkapin	TL Davis Construction, llc	William D. & Patricia A Bates	12/7/2007	$ 815,000	594-295	4672	4	3	1	$174.44
604 Burr Oak Dr.	Reach-Trinity, llc	Landsdowne Properties, Inc	10/10/2007	$ 1,260,615	591-224	5475	4	4	0	$230.25
619 Burr Oak Dr	Jonathan & Kelly Isaacs	Billy Clyde Gillispie	8/9/2007	$ 1,450,000	588-40	7787	5	5	0	$186.21
623 Burr Oak Dr	Jonathan Isaacs	Michael McBeath	5/25/2007	$ 950,000	582-628	5212	5	6	1	$182.27
627 Burr Oak Dr	George Perry	Christopher & Lisa Rodgers	1/18/2007	$ 500,000	575-694	4866	4	4	1	$102.75
			AVERAGE	**$ 995,123**						**$175.19**
639 Burr Oak Dr	TL Davis Construction, llc	David & Debra Brady	10/13/2006	$ 937,324	571-50	5298	4	3	1	$176.92

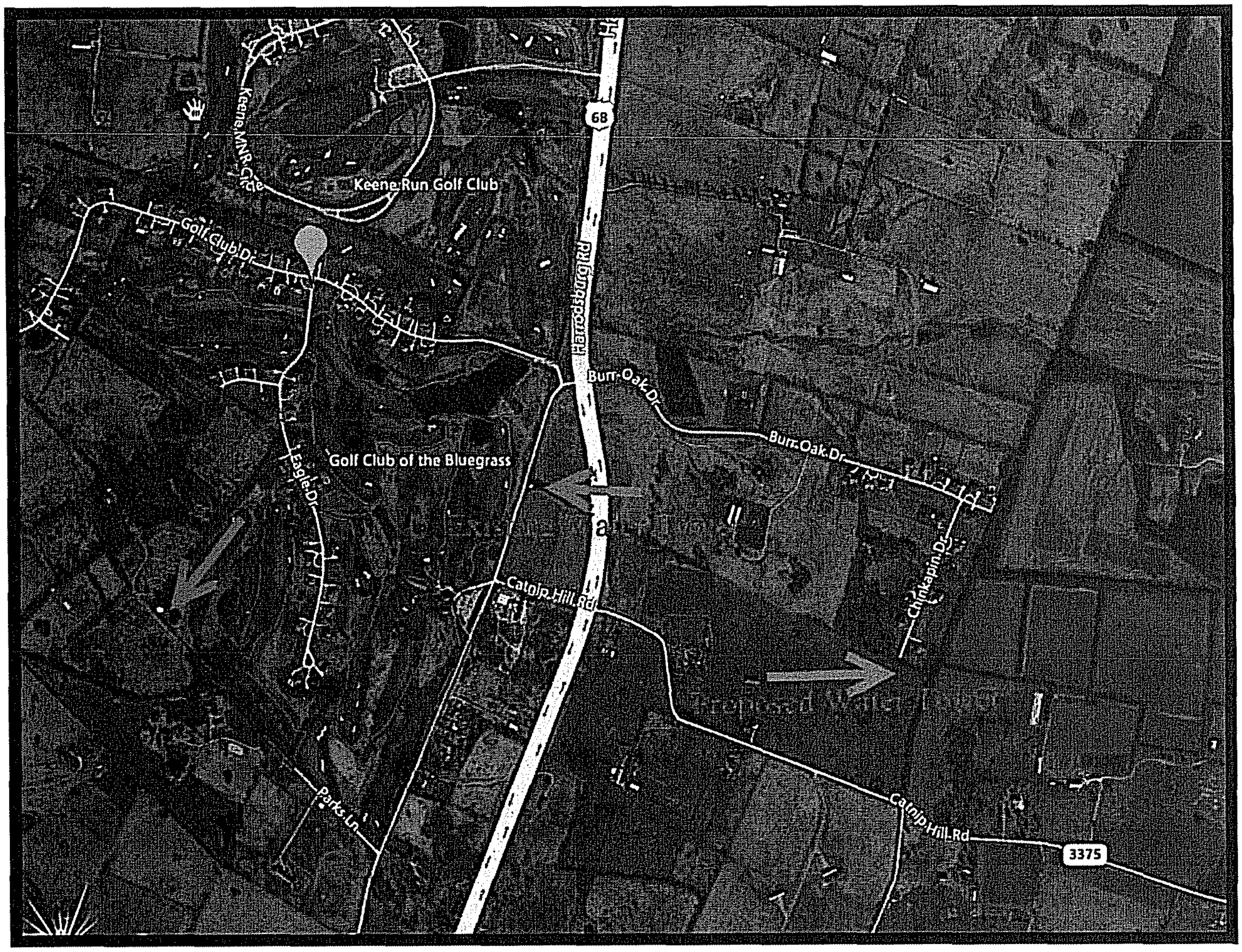
FOREST HILLS LOT SALES BY YEAR					
Address	**Seller**	**Buyer**	**Date of Sale**	**Price**	**DB-Pg**
405 Burr Oak	PBI Bank, Inc.	Fred & Lori Rutherford	6/15/2012	$ 120,000	671-424
622 Burr Oak Dr	PBI Bank, Inc.	Gale Property Management, llc	5/16/2012	$ 84,000	669-274
729 Chinkapin	Bob O'Connell Builders, llc	Carolyn Wheeler	5/4/2012	$ 100,450	668-597
705 Chinkapin	Farmers Bank & Trust Company	Gale Property Management, llc	4/9/2012	$ 92,000	667-221
725 Chinkapin	PBI Bank, Inc.	Eric & Linda Frankl	3/23/2012	$ 83,000	666-481
708 Chinkapin	Susan English	Gale Property Management, llc	3/15/2012	$ 95,000	666-173
708 Chinkapin	Frank & Susan Entwisle	Susan English	3/5/2012	$ 95,000	665-542
			AVERAGE	**$ 95,636**	
712 Chinkapin	United Bank & Trust	Robert & Sarah Doyle	9/1/2009	$ 145,000	625-436
713 Chinkapin	Farmers Bank & Trust Company	Robert & Sarah Doyle	8/25/2009	$ 145,000	625-164
600 Burr Oak Dr	Terry & Donna Seaborn	Gery & Lisa Tomassoni	7/30/2009	$ 165,000	623-707
			AVERAGE	**$ 151,667**	
733 Chinkapin	Forest Hills Of Kentucky	Dale & Michelle Marshall	3/21/2007	$ 170,000	579-55
631 Burr Oak Dr	McDonald Builders, Inc	Perry Real Estate & Appraising, Inc	3/10/2007	$ 183,845	578-315
709 Chinkapin	MKM Capital, llc	Jonathan & Kelly Isaacs	2/13/2007	$ 180,900	577-126
724 Chinkapin	Paul Vance Construction, Inc	Distinctive Custom Homes, llc	1/16/2007	$ 175,000	575-550
			AVERAGE	**$ 177,436**	
626 Burr Oak Dr	Forest Hills Of Kentucky	TL Davis Construction, llc	12/1/2006	$ 170,000	573-385
724 Chinkapin	Forest Hills Of Kentucky	Paul Vance Construction, Inc	8/10/2006	$ 170,000	567-289
728 Chinkapin	Forest Hills Of Kentucky	MKM Capital, llc	8/4/2006	$ 170,000	567-73
729 Chinkapin	Forest Hills Of Kentucky	Bob O'Connell Builders, llc	5/8/2006	$ 170,000	561-412
612 Burr Oak Dr	Forest Hills Of Kentucky	Kerley K Investments, llc	4/26/2006	$ 170,000	560-522
619 Burr Oak Dr	Forest Hills Of Kentucky	Jonathan & Kelly Isaacs	4/22/2006	$ 170,000	560-453
600 Burr Oak Dr	Forest Hills Of Kentucky	Terry & Donna Seaborn	4/18/2006	$ 175,000	560-241
604 Burr Oak Dr	Forest Hills Of Kentucky	Reach-Trinity, llc	4/18/2006	$ 175,000	560-229
627 Burr Oak Dr	Forest Hills Of Kentucky	George & Patty Perry	4/13/2006	$ 170,000	560-75
704 Chinkapin	Forest Hills Of Kentucky	TL Davis Construction, llc	3/31/2006	$ 170,000	559-193
639 Burr Oak Dr	Forest Hills Of Kentucky	TL Davis Construction, llc	3/15/2006	$ 170,000	558-140
708 Chinkapin	Forest Hills Of Kentucky	Frank & Susan Entwisle	3/6/2006	$ 165,000	557-400
623 Burr Oak Dr	Forest Hills Of Kentucky	Jonathan & Kelly Isaacs	2/7/2006	$ 170,000	556-169
			AVERAGE	**$ 170,385**	

MARKET ANALYSIS – EAGLE DRIVE (HARRODS RIDGE SUBDIVISION)

Located across U.S. 68 from Forest Hills subdivision is a comparable residential subdivision known as Harrods Ridge. Harrods Ridge began developing in 2004 around a public golf course known as Golf Club of the Bluegrass Golf Course. Similar to Forest Ridge Harrods Ridge was also developed under the cluster ordinance. This subdivision is significant for comparison for the reason that it is located across U.S. 68 from Forest Hills, was developing in a similar time frame as Forest Hills, and the lots and homes in the subdivision are of a similar size, quality and value range as Forest Hills. Included on the following page is an aerial photo which shows the proximity of the two subdivisions with Harrods Ridge being west of U.S. 68 and Forest Hills east. Harrods Ridge is also significant to the analysis for the reason that Eagle Drive which was plated in 2005 has proximity to and is within the viewshed of an existing 500,000 gallon elevated water storage tank as well as the existing 50,000 gallon tank that is located in front of Forest Hills.

View of 50KG Tank From Eagle Drive

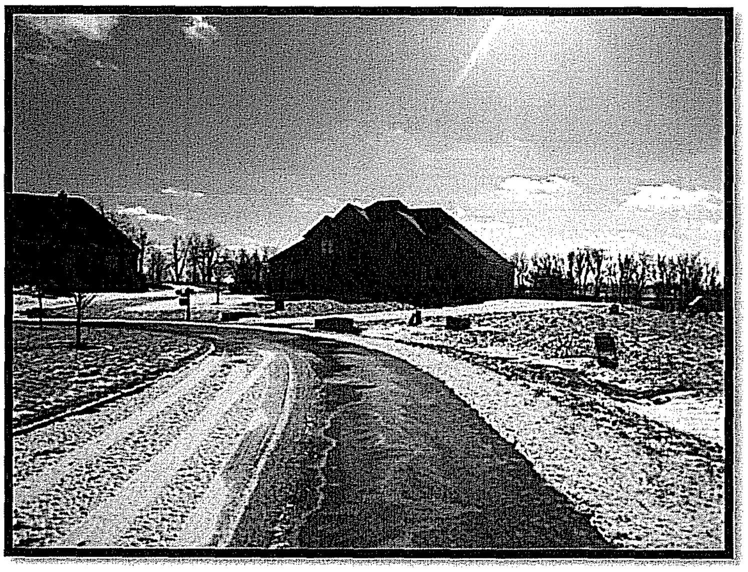
AERIAL PHOTO HARRODS RIDGE & FOREST HILLS SUBDIVISION



The following is a summary of facts related to Eagle Drive within the Harrods Ridge subdivision.

- 24 Lots Developed in 2005
- 17 Existing Homes & 2 Under Construction
- Average Home is 8,342 SF & Custom
- The 2013 average assessment is $846,980

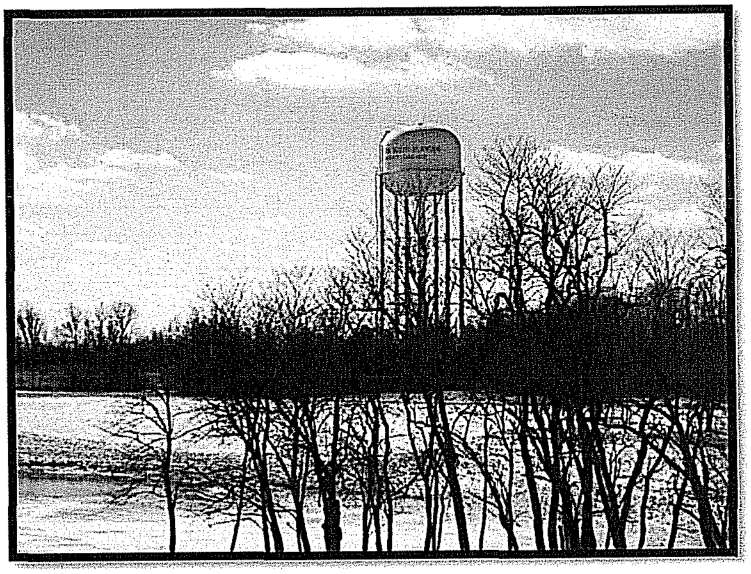
As indicated by a comparison of the statistics, Harrods Ridge subdivision and specifically Eagle Drive is very comparable to Forest Hills and therefore a reasonable comparable.



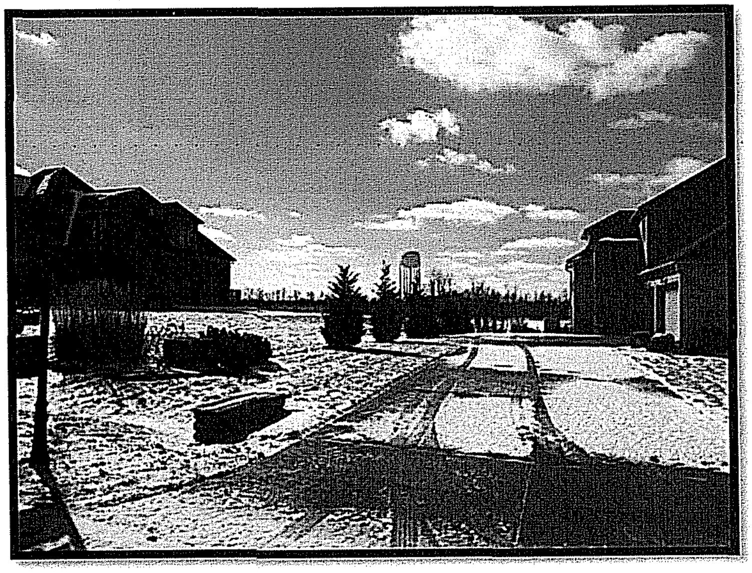
TYPICAL HOME ALONG EAGLE DRIVE

Homes which have an even address along Eagle Drive back to an existing 500,000 gallon elevated water storage tank and have visibility of an existing 50,000 gallon tank from the front. Homes with an odd address back to the existing 50,000 gallon elevated storage tank that is located in front of Forest Hills subdivision and are within the viewshed of the 500,000 gallon tank from the front. The following are photographs of the existing 500,000 gallon tank taken at various points along Eagle Drive.

View of 500KG tank from Eagle Drive Cul-De-Sac



View of 500KG tank Behind 302 Eagle Drive



View of 500KG Tank Between 300 & 302 Eagle Drive From Street

Included in the following pages are summary tables of lot and homes sales which have occurred along Eagle Drive as well as lot and homes sales from Golf Club Drive of Harrods Ridge. A comparison of these two streets is significant to this analysis for the reason that a majority of the lots/homes along Golf Club Drive are not within the viewshed of 500KG tank. Some of the lots towards the front of the subdivision are within the viewshed of the 50,000 gallon tank but because many of the lots/homes within Forest Hills are also within the viewshed of the 50,000 gallon tank a comparison can be made.

EAGLE DRIVE LOT SALES HARRODS RIDGE SUBDIVISION BY YEAR					
Address	**Seller**	**Buyer**	**Date of Sa**	**Price**	**DB-Pg**
306 Eagle Drive	Mainsource Bank	Collier Custome Homes, Inc.	7/12/2012	$ 150,000	672-466
301 Eagle Drive	Mainsource Bank	Collier Custome Homes, Inc.	7/12/2012	$ 150,000	672-466
310 Eagle Drive	Collier Custom Homes, llc	Kota Gopinath & Sirisha Perumandla	6/30/2012	$ 152,000	671-577
			AVERAGE	**$ 150,667**	
313 Eagle Drive	Design Traditions, Inc	R & J Peterson, Inc.	11/22/2010	$ 225,000	645-347
312 Eagle Drive	Design Traditions, Inc	R & J Peterson, Inc.	11/22/2010	$ 225,000	645-350
			AVERAGE	**$ 225,000**	
308 Eagle Drive	Design Traditions, Inc	Juan & Araceli Cervantes	5/30/2007	$ 200,000	583-79
			AVERAGE	**$ 200,000**	
303 Eagle Drive	Design Traditions, Inc	Collier Custome Homes, Inc.	9/27/2006	$ 189,000	570-157
302 Eagle Drive	Design Traditions, Inc	Collier Custome Homes, Inc.	3/30/2006	$ 189,000	559-120
300 Eagle Drive	Design Traditions, Inc	Frederick H. & Kathy L Gorsline	2/21/2006	$ 189,000	556-600
			AVERAGE	**$ 189,000**	
316 Eagle Drive	Design Traditions, Inc	Clyde M. Strassner Revocable Trust	12/30/2005	$ 219,000	554-24
102 Silver Fox Drive	Design Traditions, Inc	Drew Rice Construction, llc	7/27/2005	$ 179,000	544-148
203 Eagle Drive	Design Traditions, Inc	James W. Davis	7/5/2005	$ 179,000	542-501
201 Eagle Drive	Design Traditions, Inc	Collier Custome Homes, Inc.	5/25/2005	$ 179,000	539-611
205 Eagle Drive	Design Traditions, Inc	Mondelli-Blair Ventures, LLC	4/18/2005	$ 179,000	537-456
100 Silver Fox Drive	Design Traditions, Inc	Collier Custome Homes, Inc.	4/5/2005	$ 179,000	536-600
			AVERAGE	**$ 185,667**	
* Lots Which Back To 50KG Tank					
* Lots Which Do Not Back or Cant See Tank					

Eagle Drive Home Sales Harrods Ridge Subdivision By Year										
Address	**Seller**	**Buyer**	**Date of Sale**	**Price**	**DB-Pg**	**SF**	**BR**	**BA**	**1/2 BA**	**$/SF**
304 Eagle Drive	Daniel Adkins Designs, Inc	Rocky Williams	9/20/2012	$ 699,000	676-41	NA				NA
308 Eagle Drive	Juan & Araceli Cervantes	Jinzhong & Wei Cai Xu	8/22/2012	$ 720,000	674-647	5658	4	4	0	$127.25
302 Eagle Drive	Collier Custom Homes, Inc.	George & Kimberly Graham	7/31/2012	$ 829,000	673-334	5196	4	4	1	$159.55
106 Silver Fox Drive	Kathy A Bartal	Donald E. & Patrical Keaton	7/30/2012	$ 753,440	673-308	5402	4	3	1	$139.47
			AVERAGE	**$ 750,360**						**NA**
203 Eagle Drive	Jason & Stacy A. Broyles	Ayesha Shaikh	2/25/2011	$ 652,000	649-366	5886	5	8	1	$110.77
			AVERAGE	**$ 652,000**						**$110.77**
208 Eagle Drive	Design Traditions, Inc.	Ronald & Michelle Binkauskas	12/2/2010	$ 850,000	645-710	5026	5	5	1	$169.12
210 Eagle Drive	Design Traditions, Inc.	Jesse W. Rice Revocable Trust	6/25/2010	$ 724,843	640-44	4401	4	5	0	$164.70
300 Eagle Drive	Frederick J. & Kath L Gorslin	Cecil L. & Carol S. Rutherford	1/28/2010	$ 677,000	633-353	5039	4	5	0	$134.35
			AVERAGE	**$ 750,614**						**$156.06**
314 Eagle Drive	Design Traditions, Inc.	Joshua P & Whitney L Steiner	11/21/2007	$ 1,268,917	593-540	4839	4	5	1	$262.23
104 Silver Fox Drive	Design Traditions, Inc.	Alexandre V. & Christina Bioko	7/23/2007	$ 830,000	586-270	5209	4	4	1	$159.34
203 Eagle Drive	James W. Davis	Jason & Stacy A. Broyles	3/23/2007	$ 825,000	579-145	5886	5	8	1	$140.16
			AVERAGE	**$ 974,639**						**$187.24**
205 Eagle Drive	Mondelli-Blair Ventures, LL	Samuel H & Mary Lou Clymer II	6/30/2006	$ 1,074,000	564-620	5080	4	4	1	$211.42
101 Silver Fox Drive	Design Traditions, Inc.	John & Kimberly A. Billings	6/23/2006	$ 811,700	564-327	4708	5	5	1	$172.41
100 Silver Fox Drive	Collier Custom Homes, Inc.	Keith A & Jacquelynne S. Tamn	5/3/2006	$ 889,000	561-239	4987	4	4	1	$178.26
			AVERAGE	**$ 924,900**						**$187.36**
201 Eagle Drive	Collier Custom Homes, Inc.	Ryan D & Kanki Smitn-Waddles	12/30/2005	$ 728,320	554-82	4317	4	3	2	$168.71
			AVERAGE	**$ 728,320**						**$168.71**
* Houses Which Back to 500KG Tank										
* Houses Which Do Not Back or Cant See Tank										

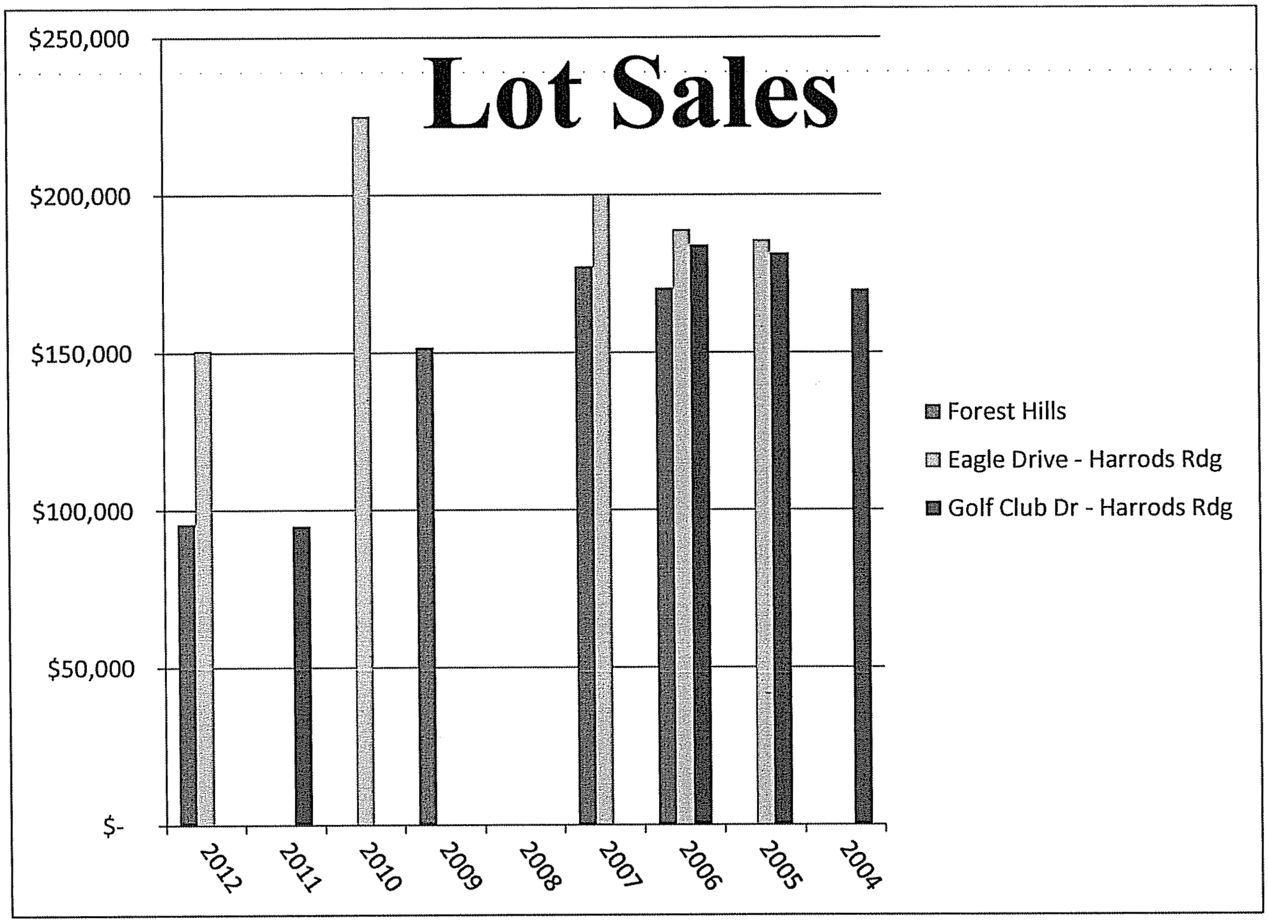
LOT SALES GOLF CLUB DRIVE HARRODS RIDGE SUBDIVISION					
Address	**Seller**	**Buyer**	**Date of Sale**	**Price**	**DB-Pg**
210 Golf Club Drive	Mainsource Bank	Joseph Whitney & Jean Ann Wallingford, II	10/6/2011	$ 95,000	659-137
			AVERAGE	**$ 95,000**	
211 Golf Club Drive	Collier Custom Homes, Inc	Design Traditions, Inc.	9/1/2006	$ 189,000	568-501
210 Golf Club Drive	Design Traditions, Inc.	Sherman W. & Wanda J. Davis	7/22/2006	$ 179,000	566-171
			AVERAGE	**$ 184,000**	
111 Golf Club Drive	Kentucky Classic Homes, Inc.	Design Traditions, Inc.	11/2/2005	$ 179,800	550-342
208 Golf Club Drive	Design Traditions, Inc.	Drew Rice Construction, llc	10/28/2005	$ 189,000	550-120
214 Golf Club Drive	Design Traditions, Inc.	Jerrico Builders, llc	9/30/2005	$ 189,000	548-220
211 Golf Club Drive	Design Traditions, Inc.	Collier Custom Homes, Inc	9/13/2005	$ 189,000	547-86
209 Golf Club Drive	Design Traditions, Inc.	Jerrico Builders, llc	8/19/2005	$ 189,000	545-657
206 Golf Club Drive	David H & Judy W. Crouse, Jr.	Design Traditions, Inc.	7/22/2005	$ 177,773	543-625
201 Golf Club Drive	Design Traditions, Inc.	James W. Davis	7/5/2005	$ 179,000	542-504
105 Golf Club Drive	Design Traditions, Inc.	Jesse W. & Patricia A. Rice	6/2/2005	$ 169,900	540-143
204 Golf Club Drive	Design Traditions, Inc.	John T. & Rosemarie Syvertsen	1/25/2005	$ 169,900	532-353
			AVERAGE	**$ 181,375**	
205 Golf Club Drive	Design Traditions, Inc.	Jonathan & Kelly Isaacs	11/22/2004	$ 169,900	528-688
101 Golf Club Drive	Design Traditions, Inc.	James Daniel & Gilda B Adkins	11/17/2004	$ 170,000	528-501
109 Golf Club Drive	Design Traditions, Inc.	Drew Rice Construction, llc	11/15/2004	$ 169,900	528-275
203 Golf Club Drive	Design Traditions, Inc.	Drew Rice Construction, llc	11/15/2004	$ 169,900	528-277
104 Golf Club Drive	Design Traditions, Inc.	Jonathan & Kelly Isaacs	11/2/2004	$ 169,900	528-691
200 Golf Club Drive	Design Traditions, Inc.	Anthony Collier	11/1/2004	$ 169,900	527-371
106 Golf Club Drive	Design Traditions, Inc.	Mondelli Homes, Inc	10/25/2004	$ 169,900	527-131
110 Golf Club Drive	Design Traditions, Inc.	Manuel & Esperanza Hernandez	10/25/2004	$ 169,900	527-122
			AVERAGE	**$ 169,913**	

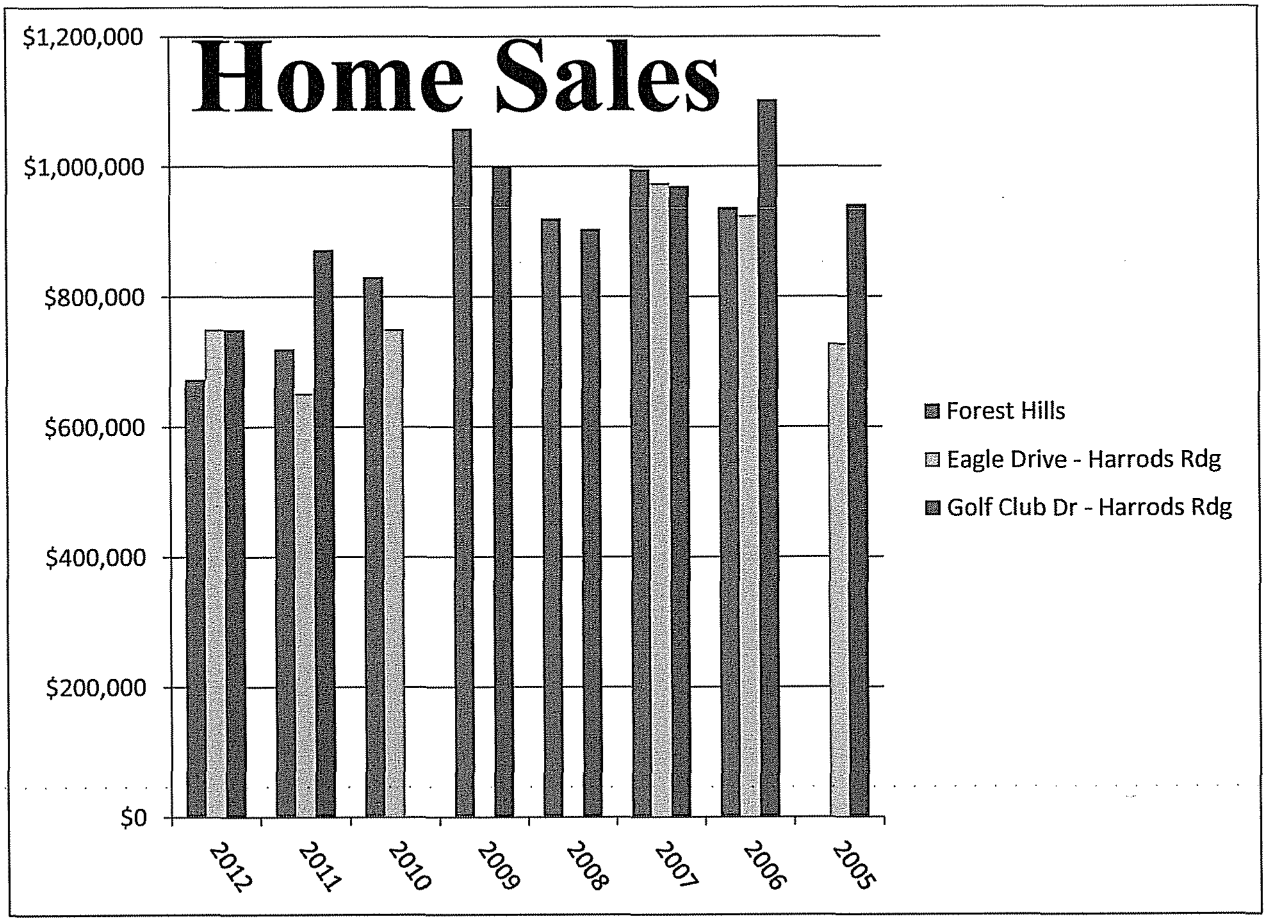
HARRODS RIDGE - GOLF CLUB DRIVE HOUSE SALES										
Address	**Seller**	**Buyer**	**Date of Sale**	**Price**	**DB-Pg**	**SF**	**BR**	**BA**	**1/2 BA**	**$/SF**
204 Golf Club Drive	Community Trust Bank, Inc.	Mitchell K. & Jennifer E. Skaggs	8/21/2012	$ 750,000	674-547	4943	4	4	2	$151.73
			AVERAGE	**$ 750,000**						
209 Golf Club Drive	Community Trust Bank, Inc.	Hina Naz	10/21/2011	$ 790,000	660-630	5983	4	3	1	$132.04
216 Golf Club Drive	Community Trust Bank, Inc.	Vincent E. & Tonya R. Gabbert	6/2/2011	$ 760,000	653-463	5011	4	4	1	$151.67
218 Golf Club Drive	Bill & Probel Jennifer Waits	Robert & Ellen Compton	3/23/2011	$ 773,000	650-540	5770	4	4	1	$133.97
110 Golf Club Drive	Manuel & Esperanza Hernandez	JB & SB Homestead, LLC	9/6/2011	$ 1,165,000	657-614	5970	6	8	0	$195.14
			AVERAGE	**$ 872,000**						**$139.23**
101 Golf Club Drive	James Daniel & Gilda B Adkins	Aslam & Shireen Ahmad	10/2/2009	$ 1,000,000	627-309	6835	4	4	1	$146.31
			AVERAGE	**$ 1,000,000**						**$146.31**
213 Golf Club Drive	Design Traditions, Inc	Jawad J. & Rihab Rayyan	10/20/2008	$ 800,000	610-587	4751	4	3	1	$168.39
214 Golf Club Drive	Jerrico Builders, llc	Michael S. & Glenda Kay Graff	9/29/2008	$ 1,000,000	CD18-282	6770	4	3	2	$147.71
217 Golf Club Drive	Design Traditions, Inc	Umar & Asma H. Murad	8/29/2008	$ 980,000	608-303	6349	4	3	1	$154.36
211 Golf Club Drive	Design Traditions, Inc	Yuming & Hong Shao Zhang	7/13/2008	$ 980,000	606-645	4798	4	4	1	$204.25
205 Golf Club Drive	Seven MS, llc	Ryan & Crystal McCauley	7/10/2008	$ 858,298	605-561	4899	4	4	0	$175.20
216 Golf Club Drive	Jonathan & Kelly Isaacs	Community Trust Bank, Inc.	5/23/2008	$ 986,017	602-707	5011	4	4	1	$196.77
111 Golf Club Drive	Design Traditions, Inc	Leonard & Joann D. Daniels-Smith	5/5/2008	$ 975,000	602-153	4544	5	6	1	$214.57
201 Golf Club Drive	Bank of New York Trustee	Amjad Abuhanieh	4/15/2008	$ 834,000	601-139	4325	4	3	1	$192.83
109 Golf Club Drive	Community Trust Bank, Inc.	Gary Michael & Amy Ditty Huff	3/20/2008	$ 775,000	599-313	3973	6	5	1	$195.07
208 Golf Club Drive	First Independence Bank	E. Tyler & Susan C Wilson	3/14/2008	$ 720,000	599-87	4147	4	3	0	$173.62
218 Golf Club Drive	Design Traditions, Inc	Bill & Probel Jennifer Waits	3/4/2008	$ 1,030,000	598-378	5770	4	4	1	$178.51
			AVERAGE	**$ 903,483**						**$181.93**
205 Golf Club Drive	Wellings Properties, llc	Seven MS, llc	11/20/2007	$ 858,298	593-467	4899	4	4	0	$175.20
202 Golf Club Drive	Kentucky Classic Homes, Inc	John M. & Garilynn Rossi	10/3/2007	$ 750,000	591-31	5237	5	5	0	$143.21
205 Golf Club Drive	Ryan & Crystal McCauley	Wellings Properties, llc	8/14/2007	$ 858,298	588-199	4899	4	4	0	$175.20
219 Golf Club Drive	Design Traditions, Inc	Ann F. & David G. Vezina	7/18/2007	$ 1,294,670	586-117	5003	4	4	1	$258.78
106 Golf Club Drive	Charles W. Mondelli & Robert McQueary	Matthew D. & Connie R. Clift	3/23/2007	$ 1,145,000	579-142	5683	4	5	1	$201.48
206 Golf Club Drive	Design Traditions, Inc	Donna Covington	2/28/2007	$ 912,000	577-605	5725	4	4	1	$159.30
			AVERAGE	**$ 969,711**						**$185.53**
215 Golf Club Drive	Design Traditions, Inc	Stephen A. & Lisa D. Schantz	12/15/2006	$ 1,381,757	574-262	5854	4	3	1	$236.04
205 Golf Club Drive	Jonathan & Kelly Isaacs	Ryan & Crystal McCauley	11/15/2006	$ 1,049,000	572-650	4899	4	4	0	$214.13
108 Golf Club Drive	Davie H. & Judy W. Crouse, Jr.	Jeffrey B. & Lora Kay Carter	9/26/2006	$ 965,000	570-141	3397	4	4	0	$284.07
102 Golf Club Drive	Design Traditions, Inc	Douglas S & Terri L Vyverberg	7/21/2006	$ 915,000	566-119	5161	4	4	0	$177.29
100 Golf Club Drive	Design Traditions, Inc	Duane T. & Celaine Rolando	6/30/2006	$ 1,222,962	564-616	5410	5	3	1	$226.06
207 Golf Club Drive	Design Traditions, Inc	James W. & Judy Diane Kelley	6/12/2006	$ 980,000	563-571	5672	4	4	1	$172.78
104 Golf Club Drive	Jonathan & Kelly Isaacs	Richard H & Mary F Ord	5/16/2006	$ 1,200,000	562-109	6201	5	5	1	$193.52
			AVERAGE	**$ 1,101,960**						**$214.84**
203 Golf Club Drive	Drew Rice Construction, llc	Kenneth J. & Clarinda K Francke	12/2/2005	$ 899,000	552-151	4342	4	4	1	$207.05
107 Golf Club Drive	Design Traditions, Inc	Stephen & Michele Angelo Jr	10/19/2005	$ 1,060,000	549-353	6107	5	5	1	$173.57
103 Golf Club Drive	Design Traditions, Inc	Gino & Karen Guarnieri	9/19/2005	$ 865,000	547-429	4828	4	3	1	$179.16
			AVERAGE	**$ 941,333**						**$186.59**

The following table shows a summary of the average sale prices for lot and homes within Forest Hills, the location of the proposed tank, Eagle Drive in Harrods Ridge subdivision which is within the viewshed of a 500KG tank and a 50KG tank and Golf Club Drive in Harrods Ridge subdivision.

SUMMARY OF SALE DATA									
Lot Sales Avg.	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**2006**	**2005**	**2004**
Forest Hills	$ 95,636	$0	$0	$151,667	$0	$177,346	$170,385	$0	
Annual Change in Value	-12.31%			-7.24%		4.09%			
Eagle Drive - Harrods Rdg	$150,667	$0	$225,000	$0	$0	$200,000	$189,000	$185,667	
Annual Change in Value	-16.52%		4.17%			5.82%	1.80%		
Golf Club Dr - Harrods Rdg		$95,000					$184,000	$181,375	$169,913
Annual Change in Value		-9.67%					1.45%	6.75%	

Homes Sale Avg.	**2012**	**2011**	**2010**	**2009**	**2008**	**2007**	**2006**	**2005**
Forest Hills	$672,803	$720,000	$830,000	$1,058,200	$919,991	$995,123	$937,324	
Annual Change in Value	-6.56%	-13.25%	-21.56%	15.02%	-7.55%	6.17%		
Eagle Drive - Harrods Rdg	$750,360	$652,000	$750,614	$0	$0	$974,639	$924,900	$728,320
Annual Change in Value	15.09%	-13.14%	-7.66%			5.38%	26.99%	
Golf Club Dr - Harrods Rdg	$750,000	$872,000	$0	$1,000,000	$903,483	$969,711	$1,101,960	$941,333
Annual Change in Value	-13.99%	-6.40%		10.68%	-6.83%	-12.00%	17.06%	

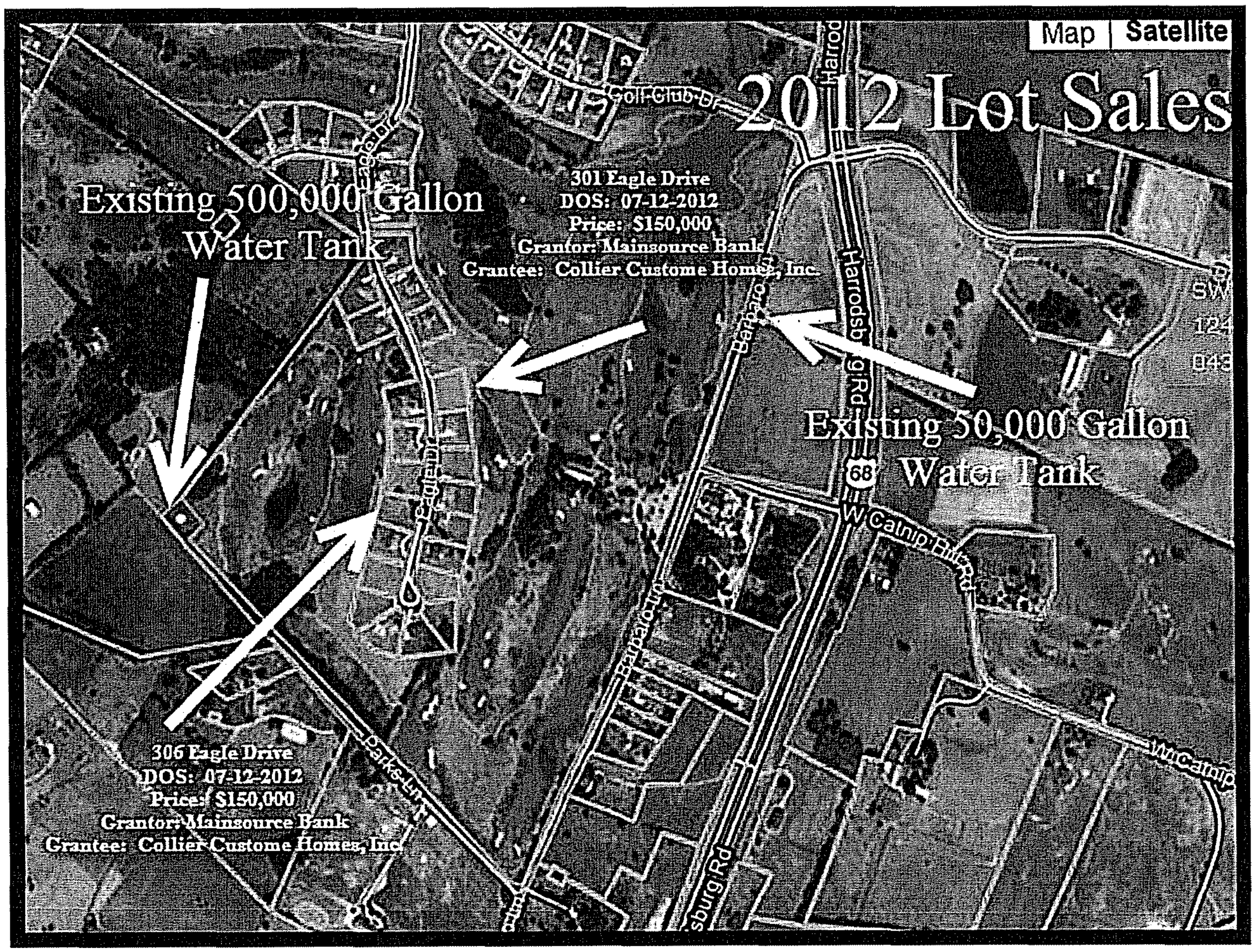


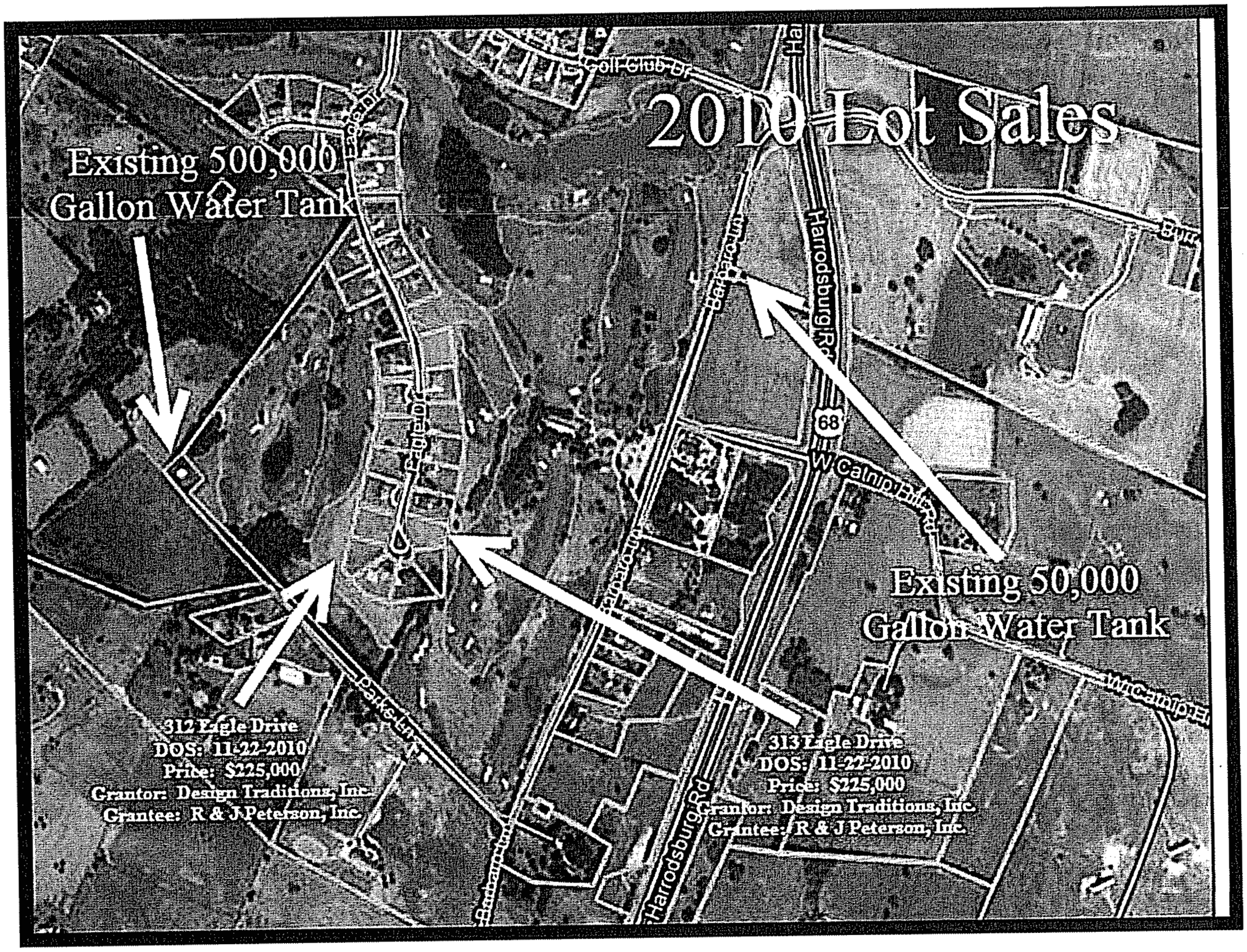


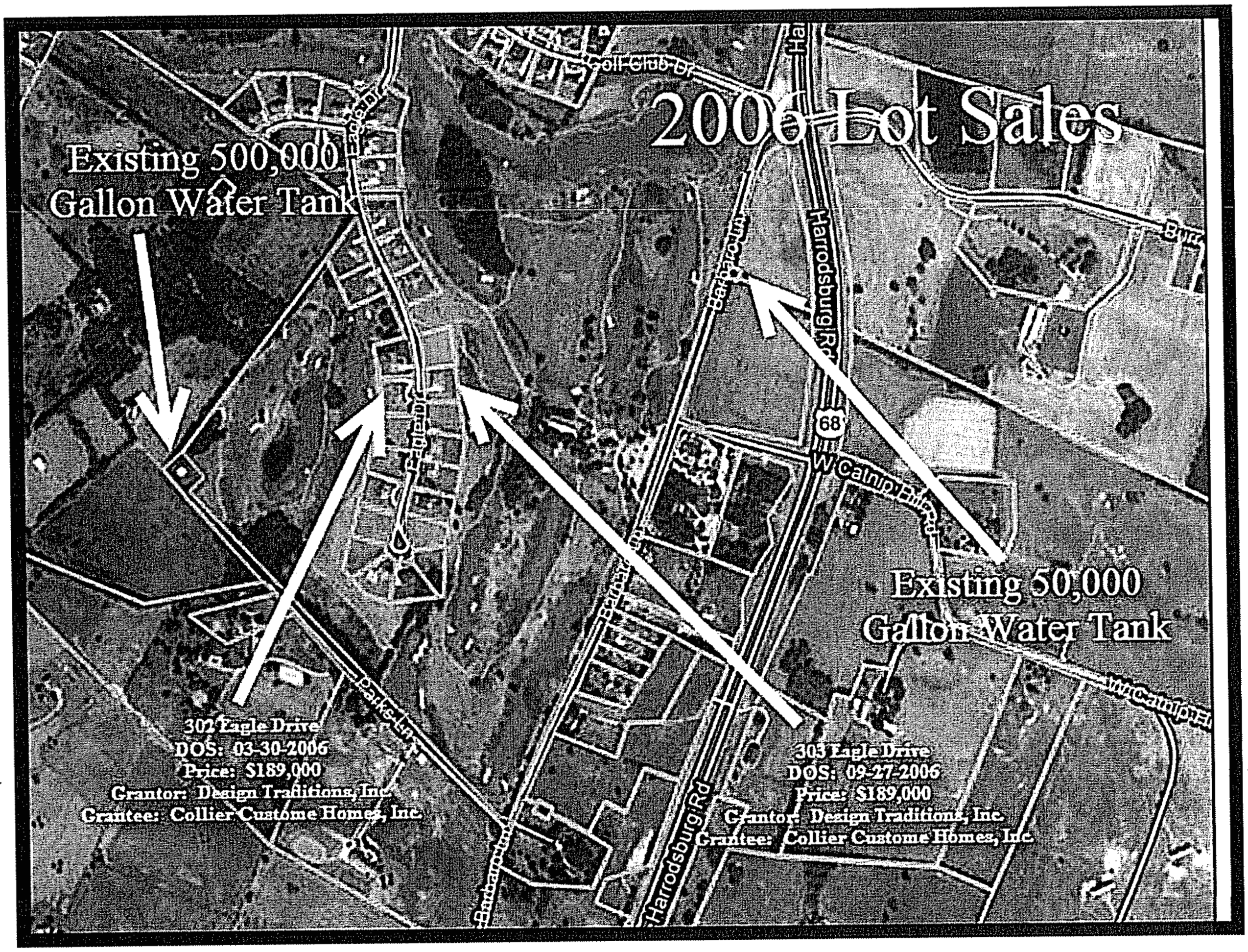
An analysis of this data indicates that Forest Hills, Eagle Drive and Golf Club Drive within Harrods Ridge have all experienced a decline in both lot and homes values which began between 2007 and 2009 for lots and between 2009 and 2010 for improved homes. Although some variance does exist from year to year between the three study groups, the trend is very similar which indicates that the decline in values is related to the real estate cycle versus the knowledge of the proposed storage tank by the Forest Hills neighbors at the JSEWD meeting on June 9, 2010.

For the reason that several of the years have limited data which can skew average values and in consideration that the homes within Forest Hills and Harrods Ridge are custom and prices can vary significantly as a result of different levels of quality, finish, design and square footage, the better comparison for isolating any change in value as a result of proximity to or being within the viewshed of a large elevated water storage tank is realized from a comparison of lot sales. The following is an analysis of those sales;

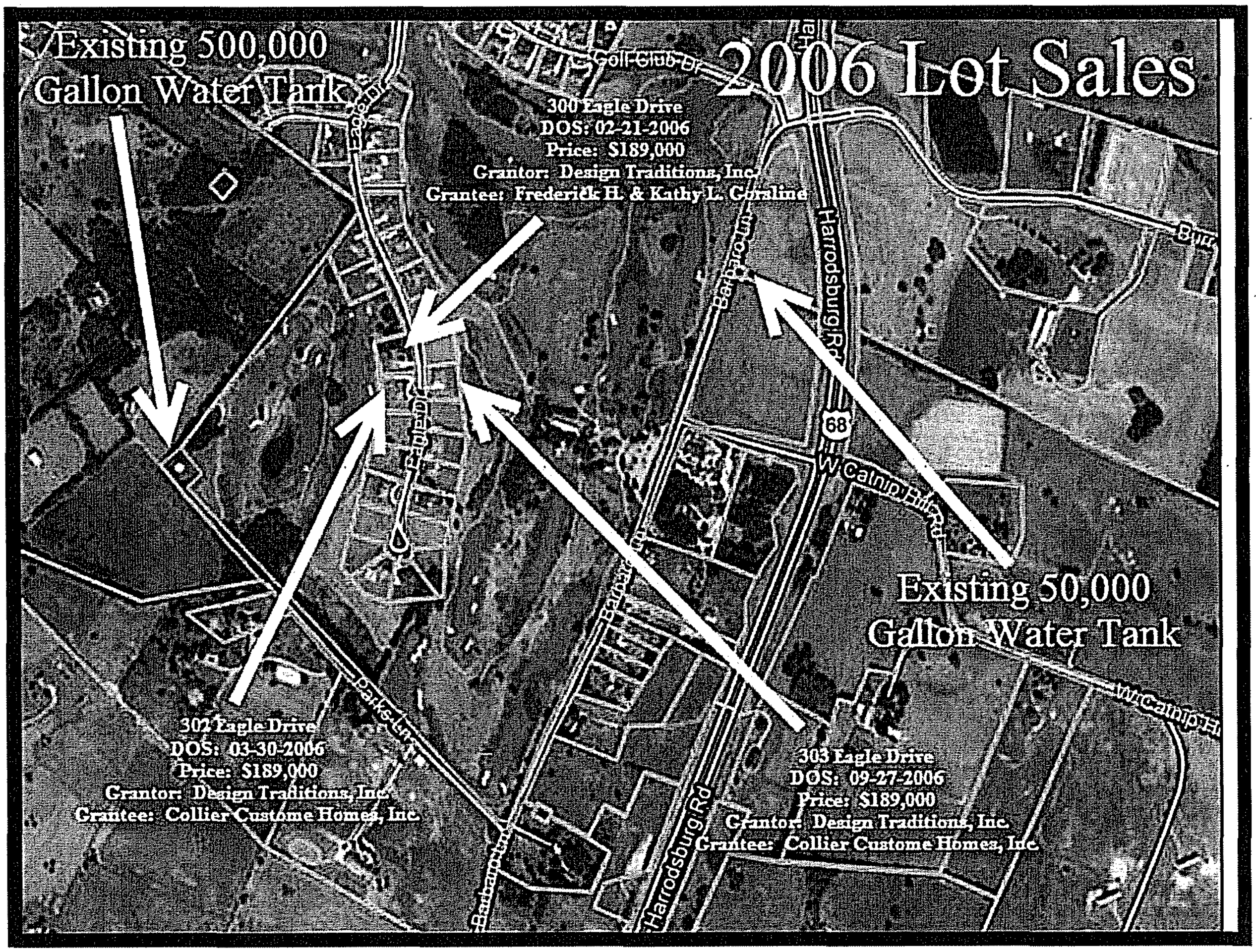
- The 2012 Lot sales involving 301 Eagle Drive ($150,000) which does not back to the larger 500KG tank sold to the same buyer and for the same price as 306 Eagle Drive ($150,000) which backs to the larger 500KG tank. The same was true for the 2010 sale involving 312 & 313 Eagle Drive and the 2006 sale of 302 & 303 Eagle Drive. This would indicate that there is no difference in value as a result of backing to the large elevated water storage tank.




2010 Lot Sales
Existing 500,000 Gallon Water Tank
Existing 50,000 Gallon Water Tank
312 Eagle Drive
DOS: 11-22-2010
Price: $225,000
Grantor: Design Traditions, Inc.
Grantee: R & J Peterson, Inc.
313 Eagle Drive
DOS: 11-22-2010
Price: $225,000
Grantor: Design Traditions, Inc.
Grantee: R & J Peterson, Inc.
Harrodsburg Rd
W Catnip Hill Rd
Golf Club Dr
Parks Ln
68

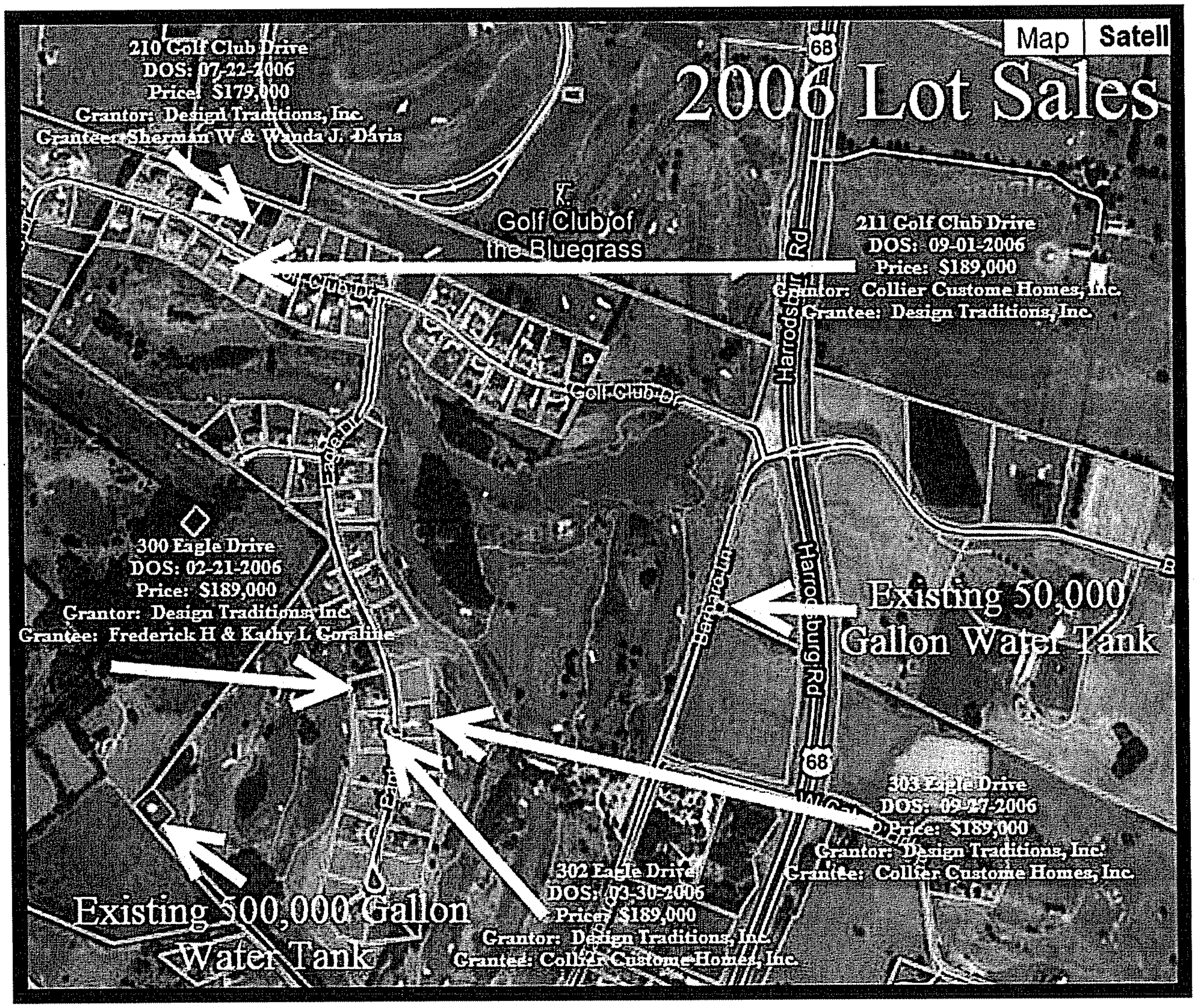

2006 Lot Sales
Existing 500,000
Gallon Water Tank
Existing 50,000
Gallon Water Tank
302 Eagle Drive
DOS: 03-30-2006
Price: $189,000
Grantor: Design Traditions, Inc.
Grantee: Collier Custome Homes, Inc.
303 Eagle Drive
DOS: 09-27-2006
Price: $189,000
Grantor: Design Traditions, Inc.
Grantee: Collier Custome Homes, Inc.
Harrodsburg Rd
Golf Club Dr
Parks Ln
W Catnip Hill Rd
68

- The 2006 sale of 300 Eagle Drive ($189,000) which backs to the 500KG tank sold for the same price as 303 Eagle Drive ($189,000) which is across the street with different buyers. This would indicate that there is no difference in value as a result of backing to the large elevated water storage tank.



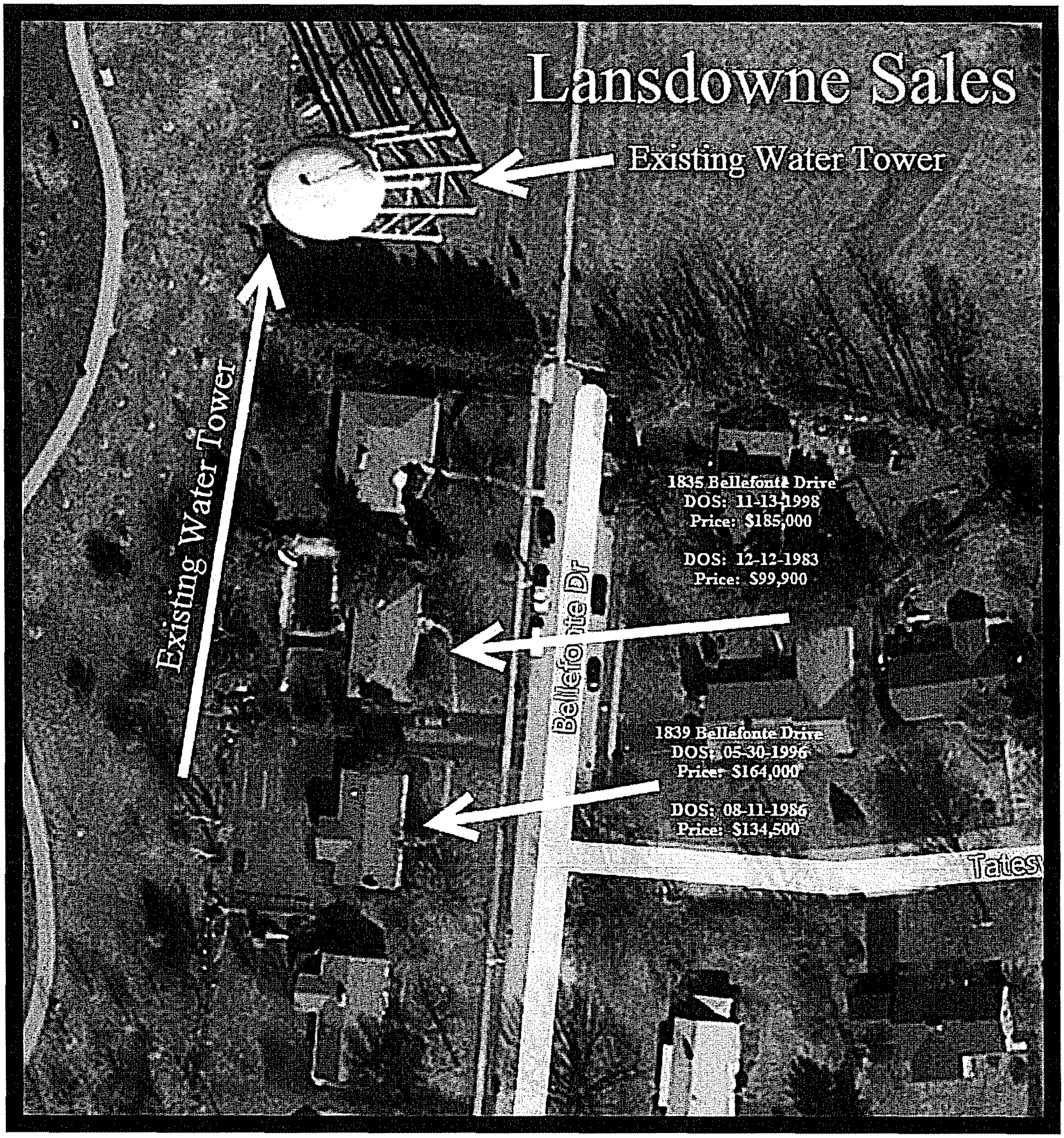
- The 2005 sale of 100 Silver Fox Drive ($179,000) which is located on the corner of Eagle Drive but where its viewshed of the tank is blocked by the house at 101 Silver Fox Drive demands the same price as 102 Silver Fox ($179,000), 201, 203, and 205 Eagle Drive ($179,000) all of which are in the viewshed from the front of the house. This would indicate that there is no difference in value as a result of being within the viewshed of a large elevated water storage tank.

- The 2006 sales at 300,302 and 303 Eagle Drive ($189,000) demanded similar prices to the properties at 211 and 210 Golf Club Drive ($179,000 & $189,000), neither of which are within the viewshed of either tank. This would indicate that there is no difference in value as a result of being within the viewshed of a large elevated water storage tank.



MARKET ANALYSIS – ARBORETUM WATER TANK SITE FAYETTE COUNTY

Located within the Arboretum on the University of Kentucky Campus and lying next to Lansdowne Shadeland neighborhood is a 500KG elevated water storage tank which has a high water elevation of 1185 feet which is slightly higher than the proposed subject at 1172 feet. The analysis has focused on two historical sales of residencies which are in close proximity to the described elevated water tank and the termination of Bellefonte Drive.



Property	Sale Price	Sale Date	Prior Sale Price	Prior Sale Date	Annual % Change	Neighborhood Annual % Change
1839 Bellefonte Drive	$164,000	5/30/1996	$134,500	8/11/1986	2.00%	2.38%
1835 Bellefonte Drive	$185,000	11/13/1998	$99,900	12/12/1983	4.19%	3.66%

The analysis has relied on the back to back sales of each property as well as a comparison to the overall average change in values within the larger subdivision during each of the time periods covered. The data is significant to the question of the effects of proximity to a large elevated water storage tank in that both sales show a substantial increase in relative value between each of their respective sale dates. In comparison to the larger subdivision it was found that the property at 1839 Bellefonte slightly lagged the larger subdivision in terms of the average annual rate of appreciation while the sale at 1835 Bellefonte exceeded the annual average increase found in the larger neighborhood. As such, the data indicates that proximity to a large elevated water storage tank does not support a diminution in value.

CONCLUSIONS

The analysis of the data provides the following conclusions;

- Forest Hills, Eagle Drive and Golf Club Drive within Harrods Ridge have all experienced a decline in both lot and homes values which began between 2007 and 2009 for lots and between 2009 and 2010 for improved homes. This trend has continued through 2012 where the market appears to have stabilized given the number of transactions which have occurred in 2012.

- Although some variance does exist from year to year between the three Jessamine County study groups, the trend is very similar which indicates that the decline in value is related to the real estate cycle versus the knowledge of the proposed storage tank by the Forest Hills neighbors at the JSEWD meeting on June 9, 2010.

- The lots within Harrods Ridge along Eagle Drive which are within the viewshed of the 500KG and 50KG tank have consistently sold at or above those lots along Golf Club Drive which are not within the viewshed. This indicates that there is no market evidence of any diminution in value as a result of being within the viewshed of a large elevated water storage tank.

- Lot prices along Eagle Drive have consistently been higher than those within Forest Hills even though Eagle Drive is within the viewshed of a 500KG elevated storage tank and a 50KG elevated storage tank.

- No variation in lot prices was indicated for those which are within the viewshed of the existing 50KG tank versus the 500KG tank. As such, the fact that the proposed tank has a capacity of 1MG is not anticipated to result in a different conclusion.

- Close proximity to an elevated water storage tank does not result in a diminution in market value.

Ernie Fletcher
Governor

LaJuana S. Wilcher, Secretary
Environmental and Public
Protection Cabinet

Christopher L. Lilly
Commissioner
Department of Public Protection

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

Mark David Goss
Chairman

Teresa J. Hill
Vice Chairman

Gregory Coker
Commissioner

April 21, 2006

Mr. Nick Strong, Chairman
Jessamine South Elkhorn Water District
117 South Main Street
Nicholasville, Kentucky 40356

RE: Case No. 2006-00156
Filing Deficiencies

Dear Chairman Strong:

Commission staff has reviewed your application in the above case. This filing is rejected for the reasons set out below. These items are either required to be filed with the application or to be referenced in the application if it is already on file with the Commission or in another case.

1. 807 KAR 5:090 Section 3 (3) The prepared testimony of each witness the applicant proposes to call in a hearing on its application.

2. 807 KAR 5:090 Section 3 (4) ...a statement of the original cost of the property and cost to the applicant.

3. 807 KAR 5:090 Section 3 (6) A capital improvement plan that includes (a) through (h). A careful reading of those items (a) through (h), combined with Administrative Case No. 375 would require a CIP that provides for total system expansion projected over at least a 10 year period[1].

4. 807 KAR 5:090 Section 3 (7) A statement describing when the proposed system development charge will be assessed and explaining why the proposed time for assessment is reasonable.

5. 807 KAR 5:090 Section 3 (9) A proposed tariff sheet that complies with 807 KAR 5:011, that proposes an effective date not less than thirty (30) days from the date the application is filed, and that sets forth the procedures and rules governing assessment of the proposed system development charge.

[1] An Investigation into the Design and Use of System Development Charges. Administrative Case No. 375, Order dated May 15, 2001.

FOREST HILLS
EXHIBIT 1

Blumberg No. 5119
EXHIBIT
IX/

6. 807 KAR 5:090 Section 3 (10) A certified copy of the resolution or ordinance of the applicant's governing body authorizing the assessment of the proposed system development charge and the filing of an application with the commission.

7. 807 KAR 5:090 Section 6 (2-5) The regulation requires specific language shall be used in the public notification.

The statutory time period in which the Commission must process this case will not commence until the above-mentioned information is filed with the Commission. If your filing contains a proposed effective date, the rejection of your filing for reasons of deficiencies voids that proposed effective date. When you file the required information to correct the deficiencies, you may refile your proposed tariff with a new proposed effective date that is at least 30 days from the date you file the required information. You are requested to file 10 copies of this information within 15 days of this letter.

If you need further assistance, please contact Sam Reid at 502/564-3940 ext. 250.

Sincerely,

Michael F. Burford
Director
Division of Filings

JRG/b

INTRA-AGENCY MEMORANDUM

KENTUCKY PUBLIC SERVICE COMMISSION

TO: File: Case No. 2006-00156

FROM: J. R. Goff, Staff Attorney J.R.

DATE: May 3, 2006

RE: Jessamine-South Elkhorn Water District
System Development Charge Application

On April 27, 2006, an informal conference was held with Commission Staff and Jessamine-South Elkhorn Water District (JSE). The names of those in attendance are shown on the attached sign-in sheet.

Sam Reid explained the informal conference procedure and the purpose of the meeting, which is to discuss the filing deficiencies described in the April 21, 2006 deficiency letter.

First, as shown in the deficiency letter, we discussed the need for pre-filed testimony as required by 807 KAR 5:090, Section 3(3). Rather than adopt the capital improvement plan (CIP), Staff advised JSE that it should have a witness offer more detail and an explanation of issues to satisfy the utility's burden of proof. The testimony should be comprehensive support for its case. The testimony should be sufficiently detailed as to only require cross-examination of those witnesses if a hearing is required.

Second, the utility needs to affirm in its filing the original cost of the property as stated in 807 KAR 5:090, Section 3(4), which can be done by including the utility's annual report in its filing.

Next, there was an involved discussion of the CIP as noted in #3 of the deficiency letter. Staff determined that the present CIP did not adequately set out the overall plan of the system and that the storage tank was the sole project to be constructed for the next ten years. Staff stated that the explanations and reasoning offered by JSE would be proper for their filed testimony. Staff pointed out that JSE should make sure that the necessary information was included in the CIP to conform with the regulation and for the application to be considered filed. Staff also advised that the regulation provides for a deviation from the requirements if necessary. Staff's position is that the present CIP filed in the application was long on history and short on future projections as to growth and need.

Staff then suggested that the utility provide minutes of board meetings during which discussions and decisions approving the project took place [Section 3(10)]. In addition Staff indicated that the utility should provide its considerations and reasons for the

FOREST HILLS
EXHIBIT 2

Blumberg No. 5119 EXHIBIT IX-2

proposed time of the assessment [Section 3 (7)]. Also, the tariff needs to contain corrected meter sizes and the rules and regulations governing the charge [Section 3(9)]. Staff pointed out that the notice needs to follow verbatim the language of the regulation.

Staff suggested that the District's attorney should sign off on the filing and make entry of appearance. Also, the tariff should include language addressing compliance with the refund provisions contained in the regulation.

There was discussion concerning the assumptions and calculations used to determine the SDC as follows:

1. The SDC was determined based on a constant growth rate of 60 new customers per year over the 40-year life of the loan used to finance the tank. Commissioner Jerry Haws indicated that this was a very conservative estimate and that it is reasonable to believe that the actual growth rate will be double the estimate and 2,400 new customers would be added in a much shorter time frame--maybe by half the estimate or 20 years.

2. Staff discussed the fact that the calculated SDC gives no credit to the customers paying the SDC for the general rate revenue they will pay into the system. It was explained that there is a debt component in the rates assessed by the District to all customers. At the current customer level the debt component is adequate to service the existing debt level. Therefore, for each additional new customer coming onto the system, additional revenue from rates will be generated that includes this debt component which can be used to retire new debt. This revenue should be used to discount the amount of the SDC to the point that the SDC and the new revenue together will be adequate to retire the new debt.

3. Although the District's application states that the objective of the new tank is to meet the future one-day minimum storage requirement for new customers, at the conference other benefits of the tank were discussed. Among those benefits were the hydraulic improvements to the system that will benefit both future and existing customers. The point was made that the amount of the SDC should be discounted for the benefits accruing to existing customers.

4. The proposed SDC is $2,000 for a 5/8" connection and $4,000 for a 1" connection. An error in the petition was noted where it stated that a charge of $4,000 would be assessed for 2" connections. The District does not allow new 2" connections. It was also noted that the calculated SDC did not include projections for the collection on 1" meters. The SDC was calculated as though only 5/8" connections would be made.

JSE inquired about the effective date of the SDC and were informed by Staff that they would need to specifically request a date that the tariff be put into effect subject to refund and state the reasons for the request since the charge could be suspended for 5-6 months. JSE should consult KRS 278.190(2-3) for the procedure concerning the request.

Meeting was adjourned.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

APPLICATION OF JESSAMINE-SOUTH ELKHORN WATER DISTRICT FOR APPROVAL OF A SYSTEM DEVELOPMENT CHARGE PURSUANT TO 807 KAR 5:090	))))	CASE N0. 2006-00156

April 27, 2006 Informal Conference

Please sign in:

NAME	**REPRESENTING**
Scott Lawless	PSC Staff
Sam Reid	PSC Staff
Jess Thompson	PSC Staff
Mark Frost	PSC Staff
Gerald Wuetcher	PSC Staff
JOHN G. HORNE	HEI
Glenn T. Smith	JSEWD
Nick Strong	JSEWD.
Carryn Lee	JSEWD / KRWA
David Edward Spenard	Office of the Attorney General
Jerry Haws	JSEWD
JAMES RICE	PSC
Dennis Jones	"
LISA TAYLOR	PSC
J. R. Goff	PSC

March 2006

CAPITAL IMPROVEMENT PROGRAM

SYSTEM STORAGE

JESSAMINE SOUTH ELKHORN WATER DISTRICT
JESSAMINE COUNTY, KENTUCKY

PWSID# 057-0249

Prepared By:

Horne Engineering, Inc.
216 South Main Street
Nicholasville, KY 40356
(859) 885-9441

TABLE OF CONTENTS

FIGURES

TABLES

GRAPHS

LIST OF APPENDICES

JESSAMINE SOUTH ELKHORN WATER DISTRICT
CAPITAL IMPROVEMENT PROGRAM
SYSTEM STORAGE

EXECUTIVE SUMMARY

This study evacuates the future need for storage in both the Northwest and Southeast Service Areas of Jessamine South Elkhorn Water District. The study analyzes the historical growth of these service areas and evaluates the probable future requirement of storage. It was determined that existing storage for the Southeast is adequate and the Northwest will need additional storage.

An analysis of water usage of the Northwest Service Area for the period of 2001-2005 was completed, with the selection of the past year 2005 as the test year. This study then determined design flow parameters of 0.42 GPM, high six-month use, 0.63 GPM, peak month use and 400 GPD as storage requirement.

Equating anticipated growth and required per capita storage, equals to a determination of constructing a 1.0 million gallon elevated storage tank. The cost of this tank was determined based on the District's 254 application to Rural Development. The conclusion of this study was a determination of a System Development Charge (SDC) of $2000/per future customer was calculated.

CAPITAL IMPROVEMENT

PROGRAM

SYSTEM STORAGE

JESSAMINE SOUTH ELKHORN WATER DISTRICT

JESSAMINE COUNTY, KENTUCKY

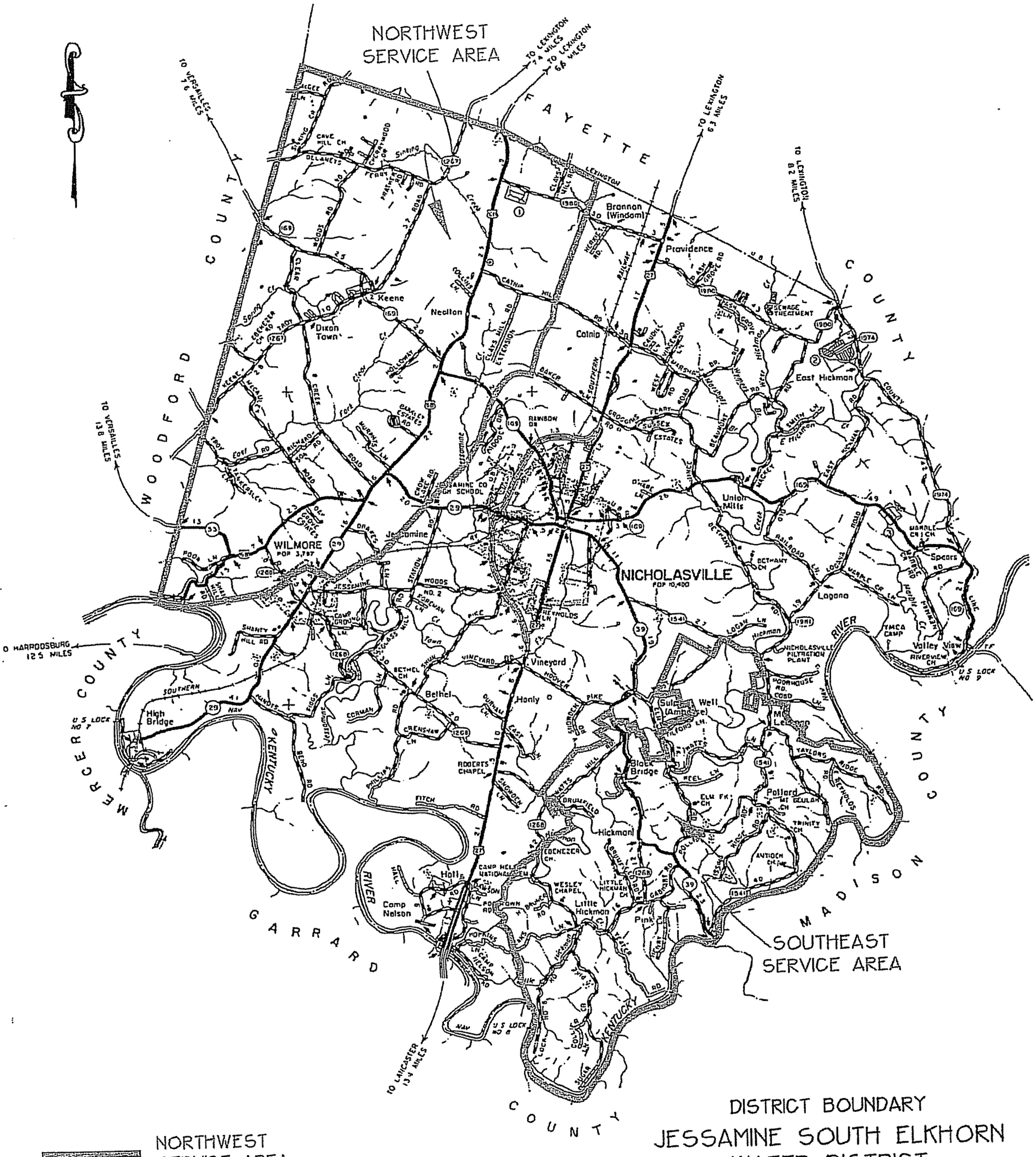
I. SCOPE OF REPORT

This report will present an analysis of the historical growth of the Northwest Service Area of the Jessamine South Elkhorn Water District. The experienced growth of the District will be analyzed based on the development of subdivisions since the inception of the District in 1972. The report will demonstrate that there has been an increasing growth demand for this area of Jessamine County and that the current projected growth dictates that additional storage capacity be incorporated into the District's system. Based on an analysis of historical water use, this report will derive a design flow and storage value which will be utilized for system hydraulic and storage design. This report will also present an analysis of the projected cost of this needed storage and will derive a system service charge to recover the cost of construction of this additional storage capacity.

II. HISTORY OF THE DISTRICT

Figure 1 is a map of Jessamine County on which the current district boundary of Jessamine South Elkhorn Water District is drawn. This water district is unique in the fact that its service areas are not contiguous and are separated in opposite corners of the County. The Northwest Service Area (shown in blue) is the resultant district boundary of the original Lexington South Elkhorn Water District whose name was subsequently changed to Jessamine South Elkhorn Water District. The Southeast Service Area (shown in red) is a recent addition to the water district with service having only begun in the year 2000. This area was created and added to Jessamine South Elkhorn Water District in the late 1990's for the purposes of obtaining funding and extending waterlines to this area of the County, which until that time had no potable water available.

Contained in Appendix A are pertinent orders and documentation that reflect the history of the Jessamine South Elkhorn Water District from its inception as the Lexington South Elkhorn Water District which occurred on May 28, 1963. As with all water districts created in the 1960's, there was an extended period of time between creation and actual funding and constructing of the original water district. Prior to actual construction of the District, the original boundary of Lexington South Elkhorn Water District was reconfigured on several occasions resulting in the creation of the portion in Jessamine County on May 20, 1964. Subsequent to this addition, funding of the Jessamine County properties was obtained and initial construction of the water district was completed in the early 1970's with service being in the northwest portion of Jessamine County.



NORTHWEST
SERVICE AREA

SOUTHEAST
SERVICE AREA

DISTRICT BOUNDARY
JESSAMINE SOUTH ELKHORN
WATER DISTRICT
JESSAMINE COUNTY, KENTUCKY
JULY, 2005

FIGURE 1

Through the years this boundary was changed with slight modifications of additions and deletions, resulting in the complete elimination of all areas within Fayette County, wherein the entire district boundary was contained within the confines of Jessamine County. Subsequent to that, the name was later changed from the Lexington South Elkhorn Water District to the Jessamine South Elkhorn Water District by order of Wm. Neal Cassity, Jessamine County Judge Executive, by order dated November 19, 1996.

In the late 1990's there was also an order issued by Judge Wm. Neal Cassity adding the area in the southeast portion of the County to the service area of Jessamine South Elkhorn Water District. This order was issued by Wm. Neal Cassity, Jessamine County Judge Executive on July 26, 1996, and is recorded in Order Book No. 1, pg. 101 of office of the Clerk of Jessamine County, a copy of which is contained in Appendix A. The primary purpose of adding this area to Jessamine South Elkhorn Water District was that it was the considered opinion of the officials, that an addition to an existing water district was of a greater benefit than attempting to create a separate and self-sustaining water district. Historically, this area of the County has never had public potable water and has been plagued by water shortages and unavailability of reliable safe private supply. Subsequent to the creation order, funding was applied for and obtained with construction initiating in the late 1990's and service to this area began in the year 2000.

District

III. DESCRIPTION OF DISTRICT

Northwest Service Area

The Northwest Service Area has as its northern boundary, the county line of Fayette/Jessamine County. In addition to this commonality of county lines, it is also located to the south of Fayette County. The importance of this geographic location is that the historical growth and high development pressures in Fayette County have been located on the southern and southeastern portion of Fayette County. Presently, Fayette County has developed most all the available lands in the southern portion of the County in the area between Harrodburg Road and Tates Creek Pike. In the particular area in question being the common area between Jessamine South Elkhorn Water District and Fayette County. These Fayette County areas have been under development pressure since the 1980's with the complete full build-out occurring in the early 1990's.

Prior to this complete build-out of the available Fayette County lands there became an increasing demand on the Northwest Service Area and in particular the area near the Fayette County line. As will be described in Section IV of this report, the location and the increased urbanization within the District's boundary has occurred predominately in the Northwest Service Area. Because of this high propensity for properties that can be developed, the District experience a severe growth in the early 1970's that exceeded its capacity to serve. Subsequent to that period of high growth demand, the District has initiated a policy of anticipating growth and requiring that all developers construct infrastructure, not only to serve their proposed development, but to mitigate any diminution of existing service that their development would create. That and aggressive planning and construction by the District has resulted in a currently in-place infrastructure that is capable of delivering more than adequate flows and pressures to all areas of the District. It was in the late 1980's that the District also embarked on an aggressive construction program to extend watermains to the southern portion of the Northwest Service Area that up until this time had never had available potable water. Presently, there are only isolated, extremely small pockets within this Northwest Service Area that do not have direct access to a distribution main.

In the 1990's in conjunction with expansion of the District into unserved areas, the District constructed a 0.5 million gallon elevated storage tank to augment the existing 50,000 gallon storage that was constructed during the initial development of the District. Prior too this time, the District had relied on the available storage of its supplier, Kentucky American Water Company, and had found it adequate. However with increased growth and demands on the deliver from the interconnect between the District and its supplier, it was determined that in-system storage would be preferable to relying on storage capacity from their supplier. This position was also supported in the 1980's during a period of high drought where the demand within the District was far in excess of the delivery capability at the interconnection, and demonstrated that in-system storage was not only desirable, but required, if the District was to maintain its self-imposed criteria of service delivery.

Southeast Service Area

The Southeast Service Area was created in 1996 and subsequently funding was obtained with construction initiated in the late 1990's and service began to this area in the year 2000. The southeast area of the County is a more rural and rugged portion of the County, and the fact that it is one of the last areas of the County to receive potable water, is indicative to the fact that it has very low development pressures and that property ownership is essentially stable. Because of the more rugged terrain, there are only a few areas that would appear to have any type of potential for future higher density developments. It would be anticipated that the area would remain essentially stable in its consumption demands from the residents.

The system was designed under the District's current policy requiring that no lines smaller than 6" be installed. Also because of the rugged topography, it required that the system be isolated into a minimum of two (2) pressure zones requiring separate storage for each zone. The design of the storage resulted in a 100,000 gallon ground standpipe constructed in each of the pressure zones resulting in a total storage capacity for the entire territory of 200,000 gallons. As of the end of 2004, there were 364 customers in the Southeast Service Area then equating to a approximately 550 gallon per customer storage capacity in the District. The service area has shown very little growth over the past three (3) years and it is not anticipated that there will be any initial high growth demand that would exceed the existing capacity. If one would relate the existing capacity of 200,000 gallons to a projected population service based on an accepted per capita demand of 300 gallons, then this would equate to a service population of approximately 667 customers, representing an excess of a 100% growth of the service area. Reasonable analysis of this allowance and comparison to the development potential of this area would dictate that it is unlikely that the Southeast Service Area will have any need for additional storage over the next thirty (30) to fifty (50) years.

IV Districts Customer Growth

IV. DISTRICT'S CUSTOMER GROWTH

Table 1 is an annual tabulation of meter services installed by Jessamine South Elkhorn Water District since beginning service in 1972, and through the year 2005. These meter services are broken down by residential and commercial, as well as whether they occur in the Northwest Service Area or the Southeast Service Area. The totals of both of these service areas show that through the year 2005, there was a total of 2,316 customers for all services representing a residential customer base of 2,255 and commercial services of 61.

This information was reduced to graphics form and is presented by Graphs 1, 2 and 3. Graph 1 is graph of the Southeast Service Area beginning with its service inception in 2000. This graph demonstrates that subsequent to the initial sign up in the early days of completion of the construction there has been little or no growth in the area and as is anticipated, very little is expected. The slight rise in number of meter sign ups from the year 2000 total of 219 to the 2005 total of 379 is indicative of the existing household which have been reticent in signing up and obtaining service. In review of the records of the Jessamine Joint Planning Commission reveals that there have been no major subdivisions in the area, nor has there been any major system expansions, within the Southeast Service Area.

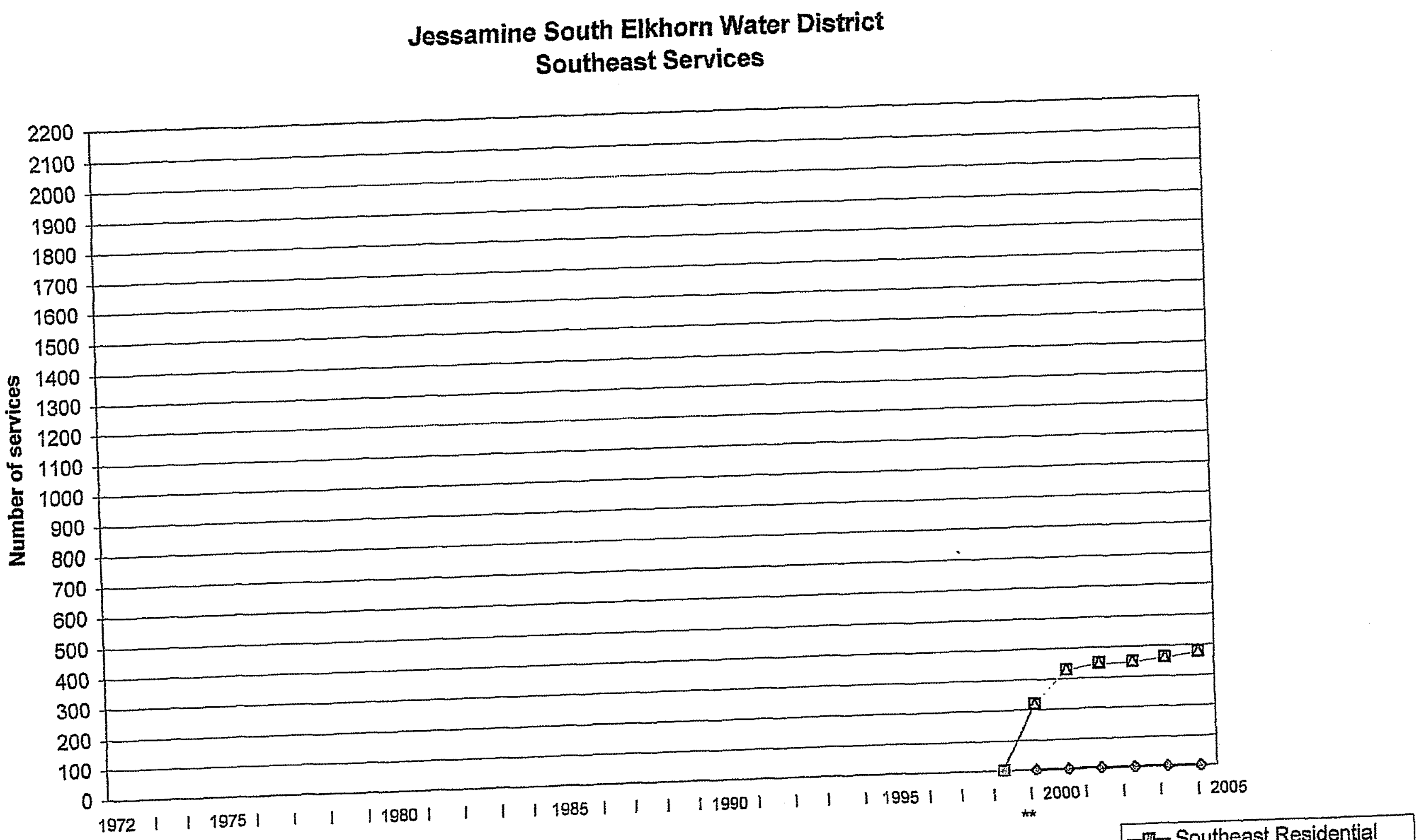
In contrast, Graph 2 is a representation of the number of customer services that have been installed in the Northwest Service Area of the District from the inception period of 1972 through 2005. This graph clearly demonstrates that growth in this portion of the County has been steady from the period immediately following the inception of the District to the current date. In fact, a search of the District's

Table 1

Summary of Meter Services
Jessamine South Elkhorn Water District

Year	Meter Services						
	Northwest		Southeast		Total		Total
	Residential	Commercial	Residential	Commercial	Residential	Commercial	All Services
1972	227				227		227
1973	246				246		246
1974	299				299		299
1975	315				315		315
1976	335				335		335
1977	405				405		405
1978	465				465		465
1979	485				485		485
1980	500				500		500
1981	500				500		500
1982	550				550		550
1983	610	6			610	6	616
1984	650	6			650	6	656
1985	710	6			710	6	716
1986	781	6			781	6	787
1987	895	6			895	6	901
1988	950	8			950	8	958
1989	987	8			987	8	995
1990	1018	15			1018	15	1033
1991	1035	22			1035	22	1057
1992	1070	22			1070	22	1092
1993	1204	22			1204	22	1226
1994	1264	22			1264	22	1286
1995	1325	22			1325	22	1347
1996	1332	18			1332	18	1350
1997	1435	34			1435	34	1469
1998	1469	46			1469	46	1515
1999	1466	42	0		1466	42	1508
2000	1506	42	219	0	1725	42	1767
2001	1600	46	331	1	1931	47	1978
2002	1632	50	349	1	1981	51	2032
2003	1669	48	352	1	2021	49	2070
2004	1739	58	364	1	2103	59	2162
2005	1876	60	379	1	2255	61	2316

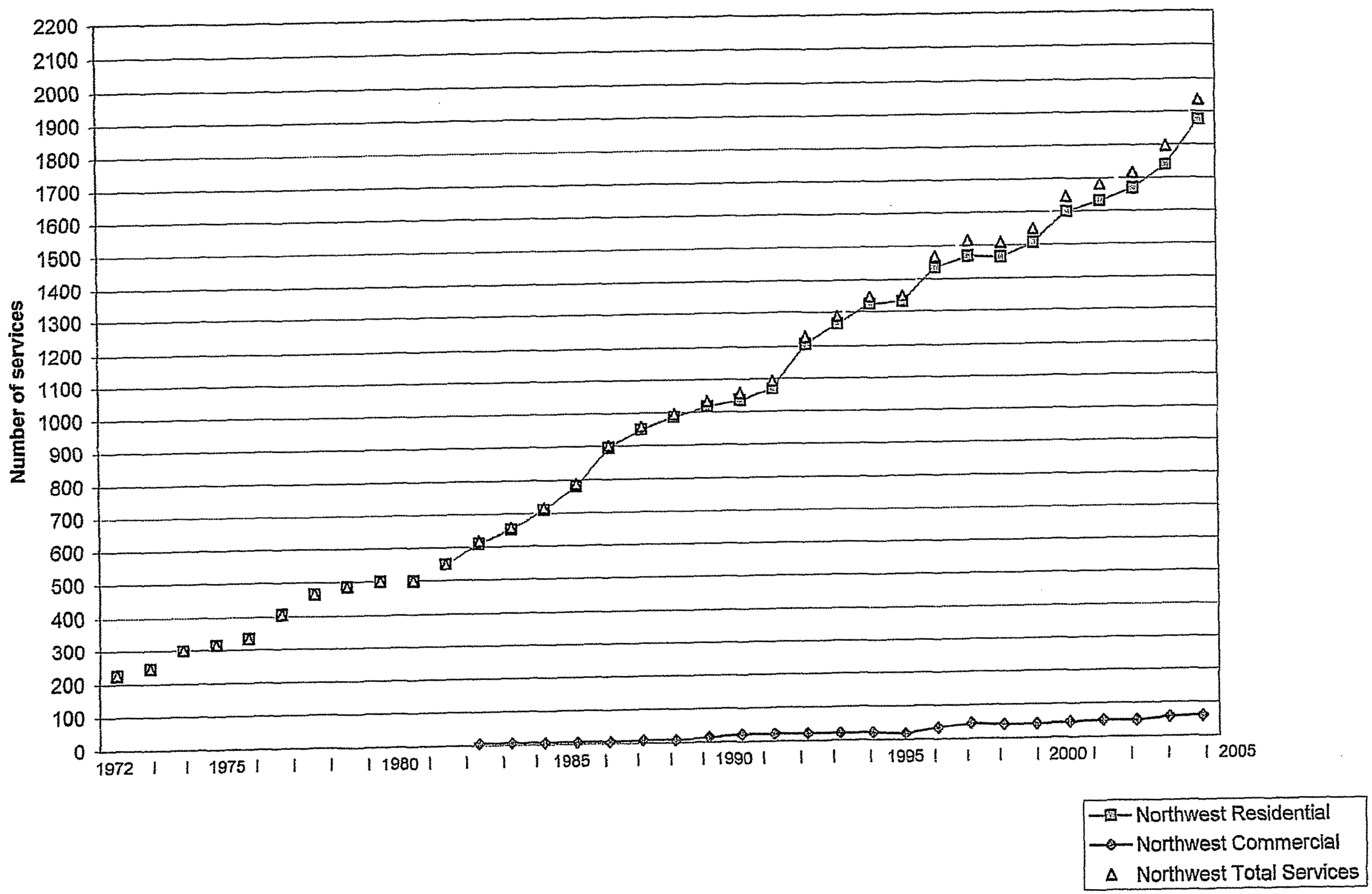
Graph 1



** Prior to 2000, all at zero - Southeast began 2000

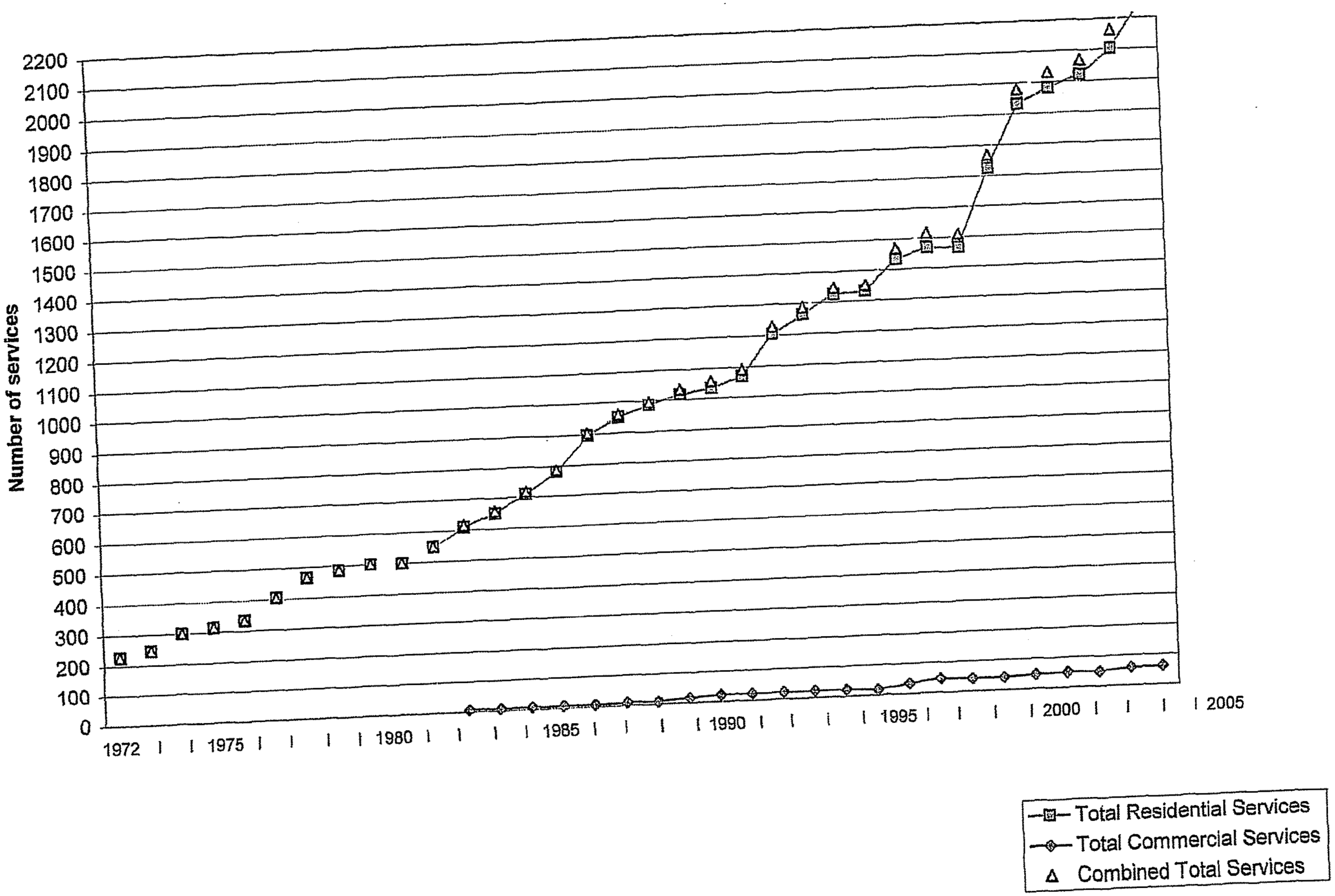
Graph 2

Jessamine South Elkhorn Water District
Northwest Services



Graph 3

Jessamine South Elkhorn Water District
Combined Northwest & Southeast Services



minutes reveals that there was a request by a developer to extend the limits of the original construction to a subdivision which he was developing in the southern portion of the service area and this was accomplished by a change order on the original line construction that occurred in the early 1970's.

Evaluating the total customer base of the northwest history reveals a total customer base of 1,709 acquired over a time period of 33 years. This equates to an average growth of 51 plus customers per year.

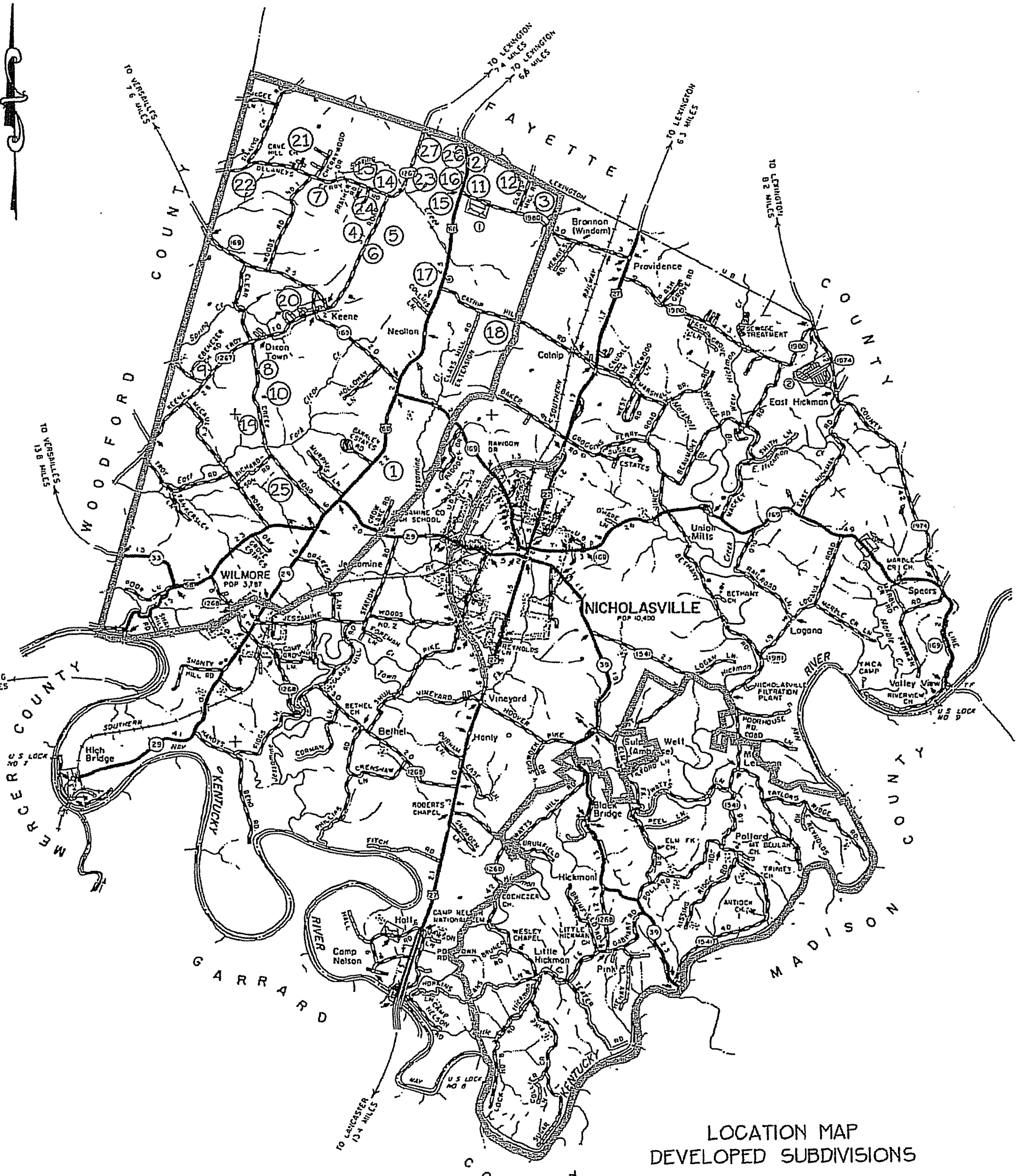
Graph 3 is a graphing of the combined customer base of both the Northwest Service Area and the Southeast Service Area and as would be expected, it show a substantial jump in 2000 with the addition of the Southeast Service Area. The important point that is demonstrated by this data is the fact of the standard and consistent growth of the northwest area which has been occurring at an approximate average of 50-60 customers per year. However, as we will be demonstrating in subsequent segments of this report, that rate has amplified in the recent years and it is anticipated that it will most likely increase at a higher rate.

V. DEVELOPMENT OF NORTHWEST SERVICE AREA

Figure 2 is a copy of the District's service area on which the location of 27 residential developments have been represented. These 27 developments are those listed in Table 2 that range in the time period from 1998 through 2005. This does not represent the entire growth period of the District, rather it is intended to show the characteristics of growth in the more recent era. Not only does the number, but the consistency and quality of the type growth, have a direct impact on total water usage. This information is also shown on Graph 4 which equates only the number of subdivisions that have occurred and not the number of lots. Table 3 is a summation of the watermain extensions that were required by these 27 subdivisions, showing the number of lots and the number of connected meter services which have occurred within these subdivisions over the period from 1985 to the present.

Graph 4 demonstrates that there has been a steady growth of subdivisions within the Northwest Service Area in the period from 1985 through 1999. However in the year 2000 to date, the number of subdivisions has increased at almost double the rate during that time period. Analysis of other indicators within the District, clearly demonstrates that the current time period of 2000 to date, even to the point that the time period from 2003 to current, shows an even greater rate of developed subdivisions. Based on an analysis of the Jessamine County Joint Planning Commission, Comprehensive Plan, as well as current in house inquiries regarding availability, one is to suspect that even this high rate of development will substantially increase within the next 5-10 years.

The question then comes as to when and where will this development pressure cease. Based on a visual analysis of the available properties within this service area, and based on the author's



LOCATION MAP
DEVELOPED SUBDIVISIONS

JESSAMINE SOUTH ELKHORN
WATER DISTRICT
JESSAMINE COUNTY, KENTUCKY
APRIL, 2005

FIGURE 2

JESSAMINE SOUTH ELKHORN WATER DISTRICT BONDARY

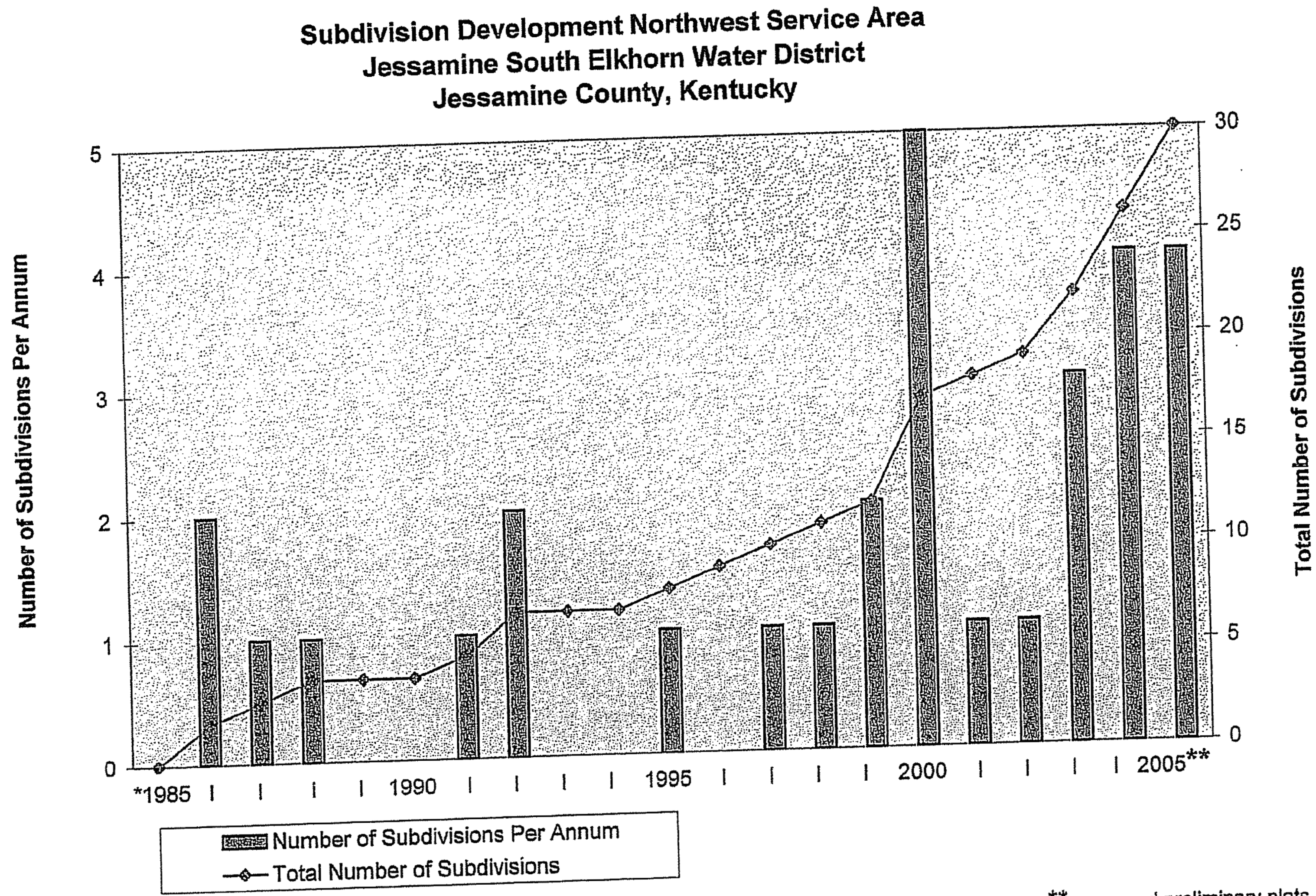
(25) LOCATION NUMBER OF DEVELOPED SUBDIVISION

Table - 2

Recorded Subdivision Plats
Northwest Service Area
Jessamine South Elkhorn Water District

Location #	Year	Subdivision Name	Plat Cab./Slide	Type	# Lots
1	2003	Barkley Woods - Unit 1	9/196	A-1 Cluster	16
1	2003	Barkley Woods - Unit 2	9/197	A-1 Cluster	10
1	2003	Barkley Woods - Unit 3	9/198	A-1 Cluster	11
1	2003	Barkley Woods - Unit 4	9/199	A-1 Cluster	10
1	2003	Barkley Woods - Unit 5	9/200	A-1 Cluster	9
1	2003	Barkley Woods - Unit 6	9/201	A-1 Cluster	11
2	1998	Bellerive Lots 1-7	8/367	Commercial	6
2	2000	Bellerive Lots 7-10	8/650	Commercial	3
3	1988	Branwood	4/60	R-1	26
4	2000	Cambridge	8/546	A-1 Cluster	34
5	2004	Cambridge East - Phase 2	9/306	A-1 Cluster	22
6	2002	Cambridge East - Unit 1	9/96	A-1 Cluster	25
7	1986	Champions	3/144	A-1 Cluster/5-Ac	66
8	2003	Chandamere	9/120	A-1 Cluster	30
9	2000	Colonial Estates	8/593	A-1 Cluster	51
10	1992	Clear Creek Estates - Unit 1, Phase I	5/157	A-1 Cluster/5-Ac	11
10	1992	Clear Creek Estates - Unit 1, Phase II	5/78	A-1 Cluster/5-Ac	11
10	1995	Clear Creek Estates - Unit 2	8/39	A-1 Cluster/5-Ac	8
11	1991	Crosswoods Place	5/144B	R-1	5
12	1999	Crosswoods Unit 3	8/503	R-1	25
13	1978	Delaney Woods	1/78	A-1 Cluster/5-Ac	35
14	2001	Emerald Estates	8/758	A-1 Cluster/5-Ac	12
15	2000	Equestrian Estates - Unit 1	8/547	R-1	20
15	2000	Equestrian Estates - Unit 2	8/584	R-1	18
15	2000	Equestrian Estates - Unit 3	8/601	R-1	13
15	2000	Equestrian Estates - Unit 4	8/548	R-1	5
15	2000	Equestrian Estates - Unit 5	8/625	R-1	18
15	2000	Equestrian Estates - Unit 6	8/633	R-1	11
15	2001	Equestrian Estates - Unit 7	8/720	R-1	6
16	1986	Equestrian Woods - Unit 1	3/93	R-1	26
16	1986	Equestrian Woods - Unit 2	3/136	R-1	29
16	1986	Equestrian Woods - Unit 3	3/137-A	R-1	20
16	1986	Equestrian Woods - Unit 4	3/137-B	R-1	17
16	1986	Equestrian Woods - Unit 5	3/92-B	R-1	26
16	1989	Equestrian Woods - Unit 6	4/152-B	R-1	10
17	2004	Harrods Ridge - Unit 1	9/342	A-1 Cluster/5-Ac	12
17	2004	Harrods Ridge - Unit 2	9/343	A-1 Cluster/5-Ac	13
17	2004	Harrods Ridge - Unit 4A	9/344	A-1 Cluster/5-Ac	8
18	1987	Heartsease	4/22	A-1 Cluster/5-Ac	20
19	2004	Holloway	9/261	A-1 Cluster	46
20	2000	Liberty Acres	DB 2/63-64	R-1	25
21	1997	Parker Lane	8/281	A-1 Cluster	20
22	1999	Stirling Estates	8/506	A-1 Cluster/5-Ac	26
23	2004	The Lakes, Unit 1A	9/271	R-1	24
23	2004	The Lakes, Unit 1B	9/339	R-1	45
24	1992	Village on the Green	5/180	A-1 Cluster/5-Ac	18
25	2000	Walden	8/680	A-1 Cluster/5-Ac	13
26	1995	Windhaven - Unit 1	8/52	R-1	47
27	2003	Windhaven - Estates	9/182	R-1	26
				TOTAL	**999**

Graph 4



* Does not include 1978 Delaney Woods

** approved preliminary plats

Table 3

Summary of Major System Expansions
1978 to 2004
Jessamine South Elkhorn Water District

			Number of Connected Meter Services										
Location #	Subdivision Name	Year	Prior 12/1998	1997	1998	1999	2000	2001	2002	2003	2004	2005	Totals
1	Barkley Woods	2003									7	11	18
2	Bellerive	1999				23	1	4					28
3	Branwood	1988	67			2	2	1					72
4	Cambridge	2000					4	14	6	4	9	5	42
5	Cambridge East - Phase 2	2004											0
6	Cambridge East - Unit 1	2002								2	8	8	18
7	Champions	1986	62	1	4	1	4	2		2	1		77
8	Chandamere	2003								1	2	2	5
9	Colonial Estates	2000					3	7		1	3	1	15
10	Clear Creek Estates	—	27			2	1	1	2	1	1		35
11	Crosswoods Place	1991	4					1					5
12	Crosswoods Unit 3	1999								2	3	1	6
13	Delaney woods	1978	26			1	1			2			30
14	Emerald Estates	2001								1	2		3
15	Equestrian Estates	2000					5	16	18	18	16	4	77
16	Equestrian Woods	1986	136		2	1	1				8		148
17	Harrods Ridge	2005										15	15
18	Heartsease	1987	19										19
19	Holloway	2004									3	2	5
20	Liberty Acres	2000					6	3	4	1			14
21	Parker Lane	1997		1	3	4	7		3		1	1	20
22	Stirling Estates	1999						2	4	1	4		11
23	The Lakes, Unit 1A	2004									2	5	7
24	Village on the Green	1992	11		2		1	3		1	1		19
25	Walden	2000						3	2		1		6
26	Windhaven - Unit 1	1995	35				2	1	2			1	41
27	Windhaven - Unit 2	2003									11	3	14
													0
	Totals		387	2	11	34	38	58	41	37	83	59	750

experience of development within this area, it is reasonable to anticipate that development pressures will continue at a high rate within the Northwest Service Area for the next 15-20 years. Based on even that high rate of projection of building, complete build out of available territories could reasonably be expected not to occur within the next 40 to 50 years.

Table 2 is a listing of the recorded subdivision plats within the Northwest Service Area that have occurred since 1985 when development pressures initiated within this service area. This does not represent several subdivisions that occurred in the 13-year period between initiation of service and 1985. These 27 subdivisions represent a total of 999 lots which is reflected in the current total of connected meters represented by Table 3. Of course, the differentiation is the current unsold/unbuilt lots within the recorded subdivisions. It should pointed out, as with all residential subdivisions, there are a number of property owners that purchase a lot but delay construction on that lot for a number of years, or they have purchased the lot as an investment for purposes of resale that ofttimes can be 5-10 years in accomplishing. A good example of that is The Champions subdivision which is a high upscale subdivision, that although it has been platted for almost 20 years and the development was sold out within five years, there are approximately two unbuilt lots in the development.

Based on a correlation of the increase per annum approval of subdivision lots, it is apparent that the current historic rate of per annum meter growth of 50/year, will increase and most likely sustain at a reasonable rate of 55 to 65 per annum. For purposes of this study, an accepted rate of 60 meters/year will be adopted.

Northwest Service Area

VI. MAJOR SUBDIVISIONS - NORTHWEST SERVICE AREA

Graphs 5 through 10 with accompanying Tables 4 through 9 represent the major subdivisions which have been developed in the Northwest Service Area during the period of 2000 to 2004. These major subdivisions are selected for analysis to represent the accelerated growth that the District has experienced during this time period. Following is an explanation by graph of the material presented. Accompanying the explanation is a brief analysis of the value of the data.

Graph 5 and Table 4

Graph 5 and Table 4 represent the number of lots associated with major subdivisions for the Northwest Service Area that have occurred in the time period 2000 to 2004. The number of lots per development range in number from 176 in 2000 to a drop of 6 in 2001. However, the time period from 2002 to present show an accelerated growth of lots having a total for those two years having 289 lots recorded. As the total number of lots on Graph 5 indicates, there is an accelerated rate of developed and record lots during the time period of 2002 to 2004. Table 4 is a listing by subdivision which give the number of lots within that recorded plat and the date of the recording of the plat. The right-hand column gives an accumulated total per year of the number of lots recorded that year.

Graph - 5

Major Subdivision
For
Northwestern Service Area
Jessamine South Elkhorn Water District
2000 to 2004

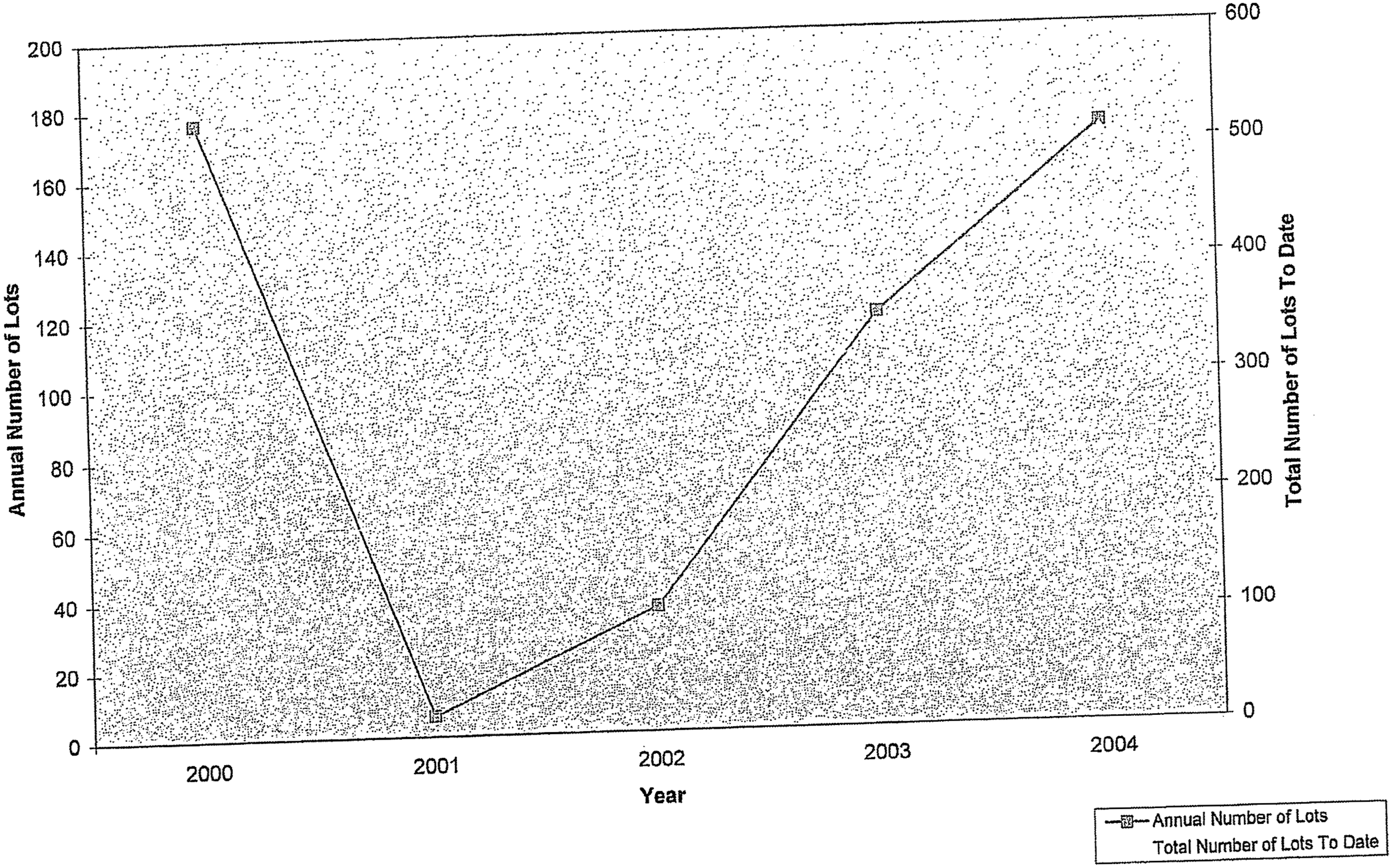


Table - 4

Tabulation of Major Subdivisions
For
Northwestern Service Area
Jessamine South Elkhorn Water District
2000 to 2004

PC/SL (2)	Subdivision Name	No. Lots	Lot Size	Type (1)	Date Plat Recorded	Total Lot Annual
9/344	Harrods Ridge, 4A	8	1	C	09/17/04	
9/343	Harrods Ridge, 2	13	1	C	09/17/04	
9/342	Harrods Ridge, 1	12	1	C	09/17/04	
9/339	The Lakes, 1B	45	1	R	09/15/04	
9/325	Cambridge Estates, Phase II	22	1	C	08/06/04	
9/271	The Lakes, 1A	25	1	R	04/02/04	
9/261	Holloway Estates	46	1	C	03/05/04	171
9/196-201	Barkley Woods	61	1	C	10/21/03	
9/183	Windhaven, Unit 3	13	1	R	09/22/03	
9/182	Windhaven, Unit 2	13	1	R	09/22/03	
9/96	Cambridge East	26	1	C	12/06/02	
9/164	Delaney Woods, Lot 20	5	5	A	08/12/03	118
9/72	Chris Haven	11	5	A	09/19/02	
9/34	Crosswoods, Unit 3	25	1	R	05/03/02	36
8/720	Equestrian Estates, Unit 7	6	1	R	05/09/01	6
8/680	Walden	13	5	A	12/28/00	
8/633	Equestrian Estates, Unit 6	11	1	R	09/01/00	
8/625	Equestrian Estates, Unit 5	18	1	R	08/03/00	
8/601	Equestrian Estates, Unit 3	13	1	R	06/20/00	
8/595	Colonial Estates	51	1	C	06/05/00	
8/584	Equestrian Estates, Unit 2	18	1	R	05/13/00	
8/548	Equestrian Estates, Unit 4	5	1	R	01/18/00	
8/546	Cambridge Estates	27	1	C	01/05/00	
8/547	Equestrian Estates, Unit 1	20	1	R	01/07/00	176
	Total Lots	507				

(1) C: Cluster, A-1
R: Zoned R-1
A: 5 Acre, A-1

(2) PC/SL: Plat Cabinet and Slide

Graph 6 and Table 5

Graph 6 and Table 5 is a analysis of the actual building permits issued for a particular subdivision. In this instance, the subdivision is Cambridge/Cambridge East Subdivision wherein the first recorded plat occurred in March 2000. The issuance of the building permits are grouped in 6-month segments beginning with the first recording date of a plat for that development. The analysis of the data indicates that for every 6-month segment there were building permits issued in this particular development ranging from a high of 8 in one 6-month segment to several segments that had only 3 issued. However the cumulative total of permits is indicative of the fact that there is a continual increase in the number of lots, and that although the rate declines somewhat in the initial three years, again the two years from 2003 to 2005 indicated an accelerated rate of issuance of permits. The rate of issuance of building permits for the time period of March 2003 to February 2005, is 13 permits per year. However, equating only the 2004 permits shows a rate of 17 permits per year. It should be noted that this is for only one (1) subdivision.

Graph - 6

Building Permits Per six Months After Issuance of Final Plat
Cambridge/Cambridge East Subdivision
First Recorded March 2000
Total Number of Lots - 47

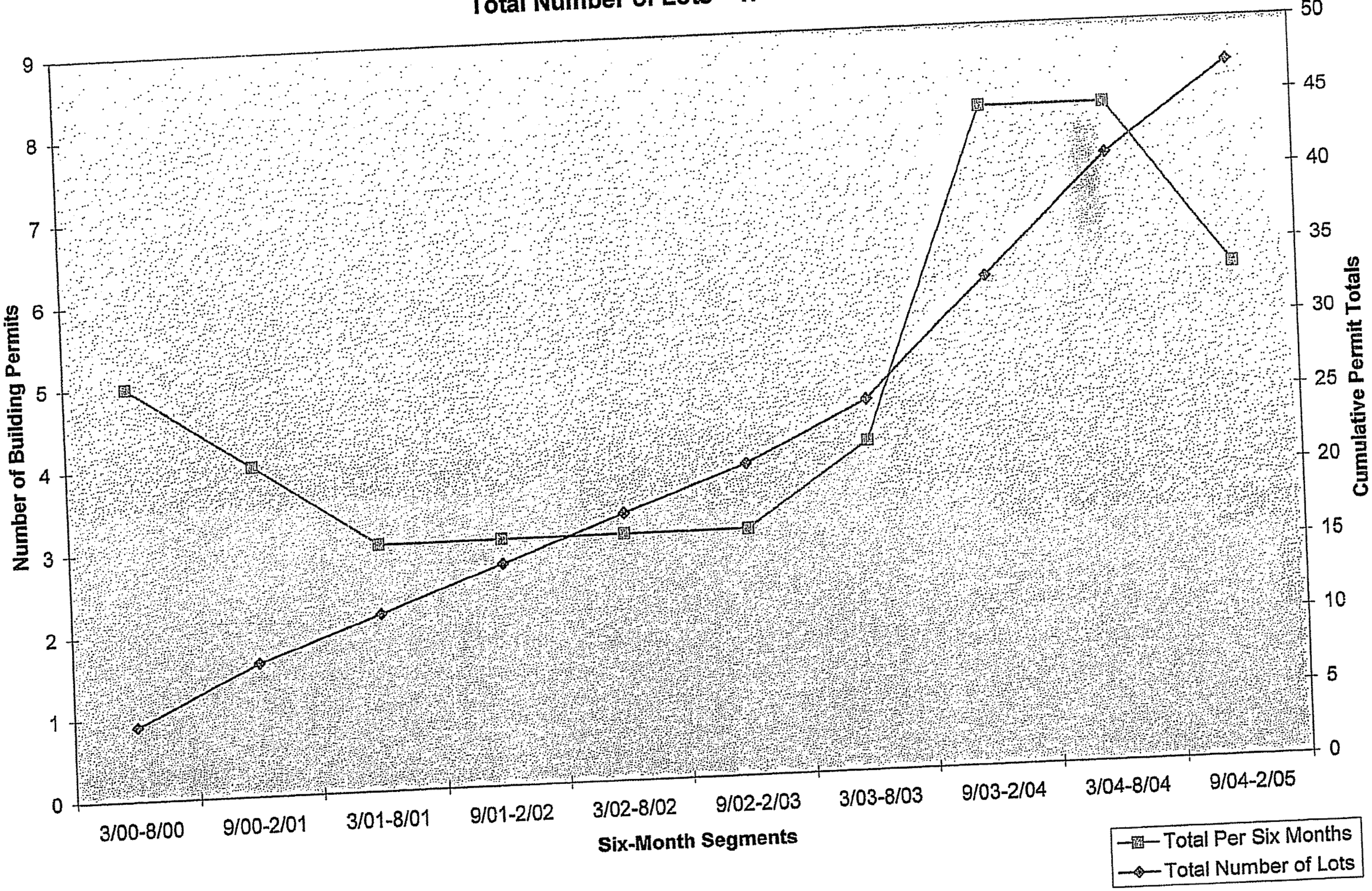


Table - 5

Tabulation Summary
of
Issued Building Permits
for
CAMBRIDGE ESTATES/CAMBRIDGE EAST SUBDIVISION

Issue Date	Name	Lot #	Street Address
03/13/00	Cambridge Est., LLC	6	214 Cambridge Lane
05/16/00	Barber, Dave	14	110 Cambridge Lane
07/07/00	Mossbarger, Evan		112 Cambridge Lane
07/25/00	Musick, John & Helen	17	116 Cambridge Lane
08/01/00	Tom Kelley Homes, Inc	19	120 Cambridge Lane
09/01/00	Avery, Craig & Doris		117 Cambridge Lane
11/02/00	Rover, Rick & Erin	27	212 Cambridge Lane
11/16/00	Entwisle, Frank & Sue		201 Cambridge Lane
02/05/01	Tom Kelley Homes, Inc	18	118 Cambridge Lane
04/10/01	Hatton Const, Co., LLC	20	122 Cambridge Lane
06/20/01	Atwell, Robert		205 Cambridge Lane
07/02/01	Frees, Randy	8	115 Cambridge Lane
09/12/01	Haynes, Mitchell	2	103 Cambridge Lane
09/21/01	Tom Kelley Homes, Inc	15	582 E. Cambridge
10/09/01	Keineth, Stephen & Kennettle	21	200 Cambridge Lane
03/07/02	Morgison, Karen & Johnny	26	210 Cambridge Lane
08/06/02	Rick Moore Homes	7	113 Cambridge Lane
08/28/02	Ingram, Dewayne & Pat		95 Cambridge Lane
12/13/02	Barber, Dave	11	522 E. Cambridge
01/28/03	Hudnell, Rick & Pam	8	354 E. Cambridge
02/06/03	Short, Wm & Pattie	9	100 Cambridge Lane
05/06/03	Tom Kelley Homes, Inc	11	104 Cambridge Lane
05/21/03	Knight, Dan & Kathy	25	615 E. Cambridge
07/08/03	Meek, John & Robin		121 Cambridge Lane
07/29/03	Chambers, Crosswell		290 E. Cambridge
09/19/03	Gallion, Joe	17	542 E. Cambridge
09/26/03	Issacs, Jonathan	16	114 Cambridge Lane
09/26/03	Issacs, Jonathan	25	208 Cambridge Lane
10/14/03	Meade, Mark		105 Cambridge Lane
12/19/03	Tom Kelley Homes, Inc	1	203 Cambridge Lane
02/04/04	Haskins, David & Tracy	22	202 Cambridge Lane
02/11/04	Shaefer Homes, Inc	12	542 E. Cambridge
02/20/04	Childers, Michael D.	10	102 Cambridge Lane
03/08/04	Patterson, Ron	47	407 Stonegate Dr
03/15/04	Boggs, Doug & Linda	5	109 Cambridge Lane
03/15/04	Issacs, Jonathan	12	106 Cambridge Lane
05/14/04	Ritz, Charles	12	534 E. Cambridge
05/21/04	Issacs Const.	4	422 W. Brannon
05/25/04	Harris, Doug	63	425 W. Brannon
06/23/04	Stucky, John	13	108 Cambridge Lane
08/09/04	Mitchell, Doug	30	520 E. Cambridge
09/11/04	Unknown	22	308 Golf Club Drive
09/14/04	Tom Kelley Homes, Inc	2	235 E. Cambridge
10/07/04	Miers, Wendall		417 E. Cambridge
12/16/04	O'Connell, Bob	21	411 E. Cambridge
12/18/04	Weldon, Brian & Mary	3	261 E. Cambridge
12/22/04	Chass, Joe	19	383 E. Cambridge

Total Lots Issues - 47

Graph 7 and Table 6

Graph 7 and Table is a similar graph for Equestrian Estates Subdivision which had its first recorded plat in January 2000. The graphing of the permits issued during the various 6-month segments indicate a wide range of numbers during the early 2000 to 2002 period then steady out to a more constant rate of a range of 4 to 7 permits per 6-month segment, equating to a 8 to 14 annual issuance. This development shows a somewhat different characteristic of total cumulative permits from the prior one, in that the rate is more consistent from the initial issuance through the December 2004 period. Although an examination of the two rates show that this rate of issuance is somewhat similar to the latter period of the prior development, indicating that the overall development has accelerated at a high rate of building.

Graph - 7

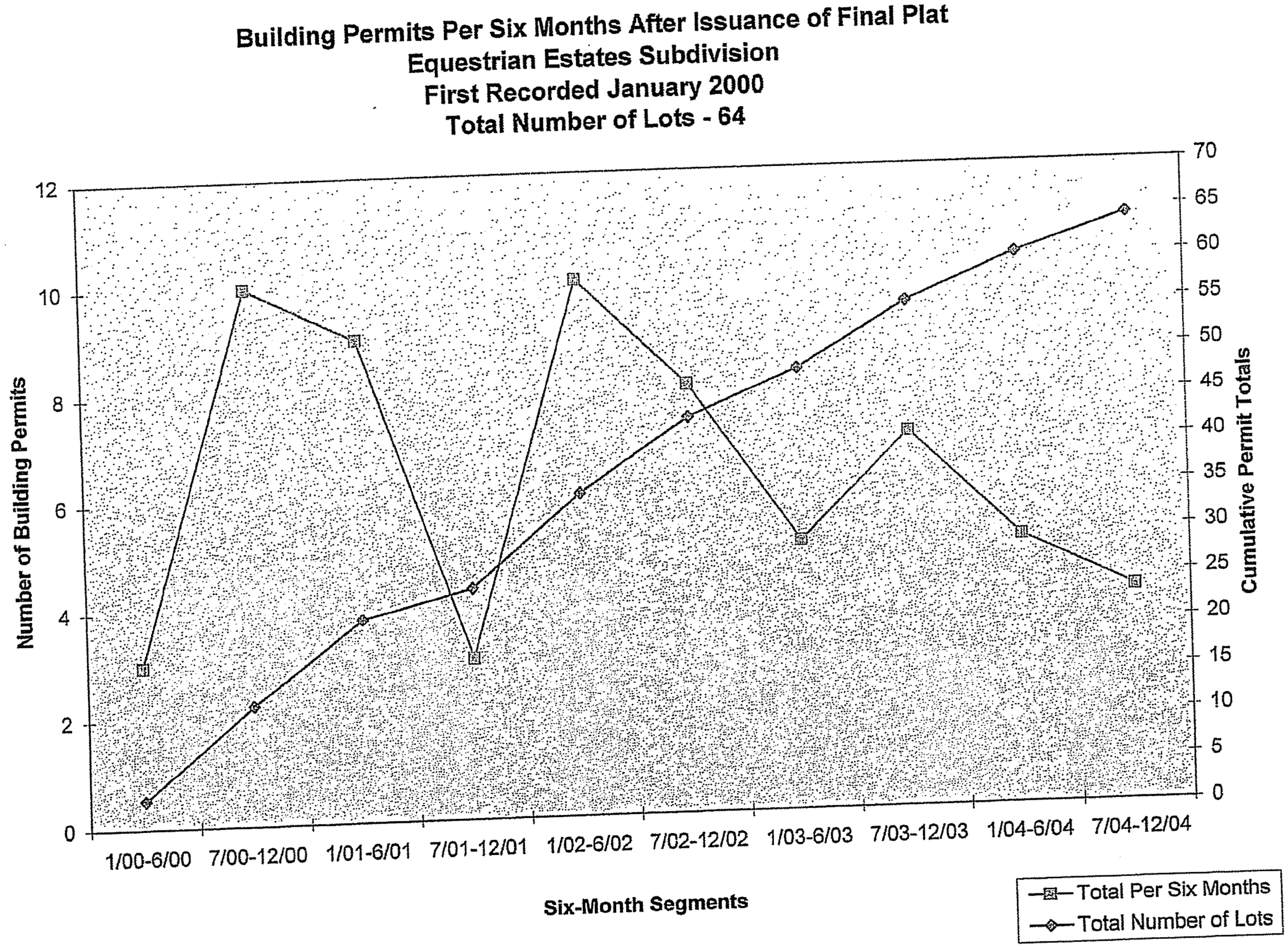

Building Permits Per Six Months After Issuance of Final Plat
Equestrian Estates Subdivision
First Recorded January 2000
Total Number of Lots - 64
Number of Building Permits
0
2
4
6
8
10
12
Cumulative Permit Totals
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
1/00-6/00
7/00-12/00
1/01-6/01
7/01-12/01
1/02-6/02
7/02-12/02
1/03-6/03
7/03-12/03
1/04-6/04
7/04-12/04
Six-Month Segments
Total Per Six Months
Total Number of Lots

Table - 6

Tabulation Summary
of
Issued Building Permits
for
EQUESTRIAN ESTATES SUBDIVISION

Issue Date	Name	Lot #	Street Address
01/26/00	Tom Kelley Homes, Inc	25	None Listed
02/24/00	Mills, Lee Thomas	24	None Listed
03/13/00	Double DA, LLC	20	104 Aetna Lane
08/18/00	Worshem, Fred	19	103 Aetna Lane
08/18/00	Design Essence, Inc.	17	202 W. Brannon
09/18/00	Mann, Joe & Peggy	7	404 W. Brannon
09/20/00	Tom Kelley Homes, Inc	60	203 W. Brannon
09/20/00	Tom Kelley Homes, Inc	85	401 W. Brannon
09/20/00	Tom Kelley Homes, Inc	5	408 W. Brannon
09/20/00	Tom Kelley Homes, Inc	2	414 W. Brannon
11/02/00	Parsons, Rodney	73	115 Foaling Ridge
11/06/00	Canup, Inc.	4	410 W. Brannon
12/19/00	Tarvin, David	86	403 W. Brannon
02/18/01	Head Prop., Inc.	32	101 Windy View
02/28/01	Trumpet Builders	89	409 W. Brannon
04/22/01	Muhni, Odeh	67	103 Foaling Ridge
05/24/01	Rinnacle Monarch, LLC	26	110 Kendall Lane
05/31/01	Tom Kelley Homes, Inc	80	118 Foaling Ridge
06/05/01	Cholkley, Robin & Judson	75	119 Foaling Ridge
06/07/01	Haynes, Alvin		105 Windy View
06/08/01	Tom Kelley Homes, Inc	83	112 Foaling Ridge
06/15/01	Johnson, Jerry	13	304 W. Brannon
08/22/01	Dellavelle, Horris	78	122 Foaling Ridge
10/19/01	Tom Kelley Homes, Inc	10	310 W. Brannon
12/31/01	Campbell, Christopher & Robert	12	200 W. Brannon
02/07/02	Greer, Kenneth	8	402 W. Brannon
02/13/02	Kuhn, Rober & Janet	81	116 Foaling Ridge
03/15/02	Ritz Neely Homes, LLC	1	111 Foaling Ridge
03/21/02	Tom Kelley Homes, Inc	23	102 W. Brannon
04/14/02	JTN Homes	74	117 Foaling Ridge
05/06/02	New Classics Homes, LLC	54	101 Kendall Lane
05/20/02	Henning, Phillip & Melissa	50	108 Katelyn Lane
05/28/02	Zoeckler, Scott	35	104 Haynes Circle
06/04/02	Wiley, Robert & Ilnda	12	306 W. Brannon
06/12/02	Sturgill, Edward	3	106 Aetna Lane
08/02/02	McCoy, Wm. & Mary	2	108 Aetna Lane
08/02/02	Cooke, Jim	70	109 Foaling Ridge
09/18/02	Issacs, Jonathan	51	206 Ponder Way
09/25/02	Adelsperger, Paul W.	9	400 W. Brannon
10/21/02	Boshe, Favi & Ithen	84	110 Foaling Ridge
10/23/02	Smith, Jackie & Tim	37	100 Windy View
11/21/02	Century Builders	62	301 W. Brannon
11/26/02	Queen, Jeff	14	302 W. Brannon
01/06/03	Tipton, David	64	305 W. Brannon
01/17/03	Tipton, David	62	303 W. Brannon

Table - 6 (con't)

03/03/03	Classic Impact Homes	56	105 Kendall Lane
04/04/03	Nelson, Mike	27	108 Kendall Lane
05/07/03	Herman, Chuck & Carole	82	114 Foaling Ridge
07/14/03	Sadler, Reicah, & Kelley Stone	24	206 Cambridge Lane
07/14/03	Turner, Bradley & Morgan	9	386 E. Cambridge
07/14/03	Hishmeh, Bessem	66	309 W. Brannon
09/08/03	Crooks, Pete & Denise	89	409 W. Brannon
11/04/03	Bluegrass Fine Homes, Inc.	21	102 Aetna Lane
12/09/03	Syvertsen, John & Terri	77	123 Foaling Ridge
12/18/03	Head Prop., Inc.	91	413 W. Brannon
02/22/04	Greinka, Bruce & PJ	6	406 W. Brannon
04/13/04	Mohr, Gerry & Terry	72	113 Foaling Ridge
04/15/04	Collier, Anthony T.	57	107 Kendall Lane
05/19/04	Tom Kelley Homes, Inc	60	203 W. Brannon
05/24/04	Wheeler, Greg & Shannon	76	121 Foaling Ridge
07/13/04	Marcus Builders, LLC	1	105 Aetna Lane
08/20/04	Lutz, David & Jamie	55	103 Kendall Lane
10/08/04	Head Prop., Inc.	35	104 Windy View
10/19/04	Progressive Home Builders, LLC	69	107 Foaling Ridge

Total Lots Issued - 64

Graph 8 and Table 7

Graph 8 and Table 7 represents the Windhaven Estates Subdivision, Unit 1. This particular subdivision was selected more so for its unique characteristic of build out, than its representation of a major development. There were only 16 lots represented in this development. However, this section of development was adjacent to another subdivision that was developed in the 1990's and is located approximately 500 feet from the Fayette/Jessamine County line. The analysis of the actual issuance of permit show that upon recordation in the 6-month period beginning when the plat was recorded in September 2003, shows that 8 permits (which equates to 50% of the available lots) were issued for construction. Within the following subsequent 6-month period, an additional 6 permits were issued, bringing the total issuance of 14 lots within a 12-month period, representing ⅞ of subdivision build out in 1-year time. Therefore, the subsequent 2-years representing the completion of the remaining 2 lots show a substantially lower rate of increase, but this undoubtedly is equated to multiple lots purchased by builders and holding lots until they have completed and sold the previous lot.

Graph - 8

Building Permits Per Six Months After Issuance of Final Plat
Windhaven Estates Subdivision - Unit 1
First Recorded September 2003
Total Number of Lots - 16

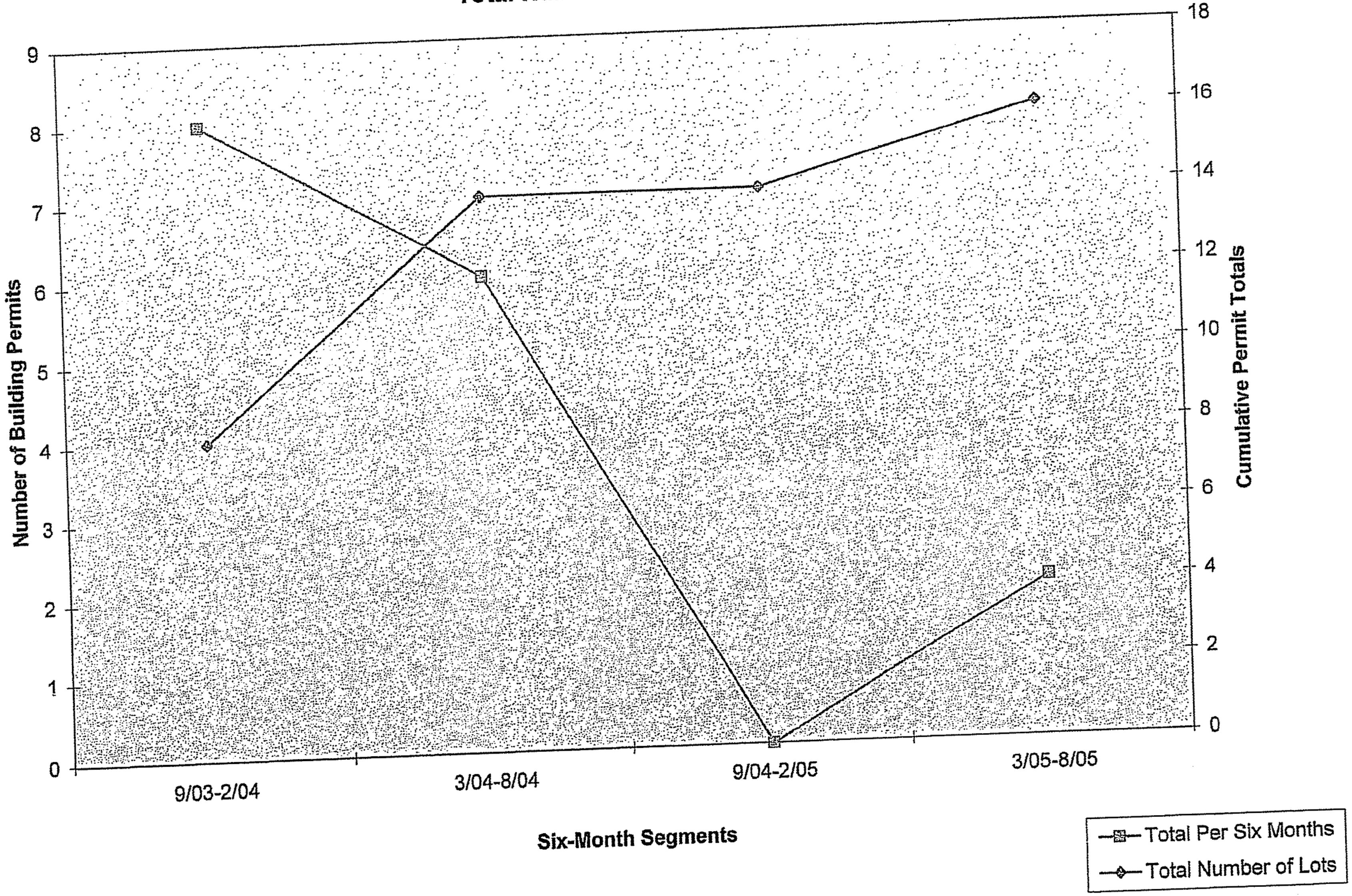


Table - 7

Tabulation Summary
of
Issued Building Permits
for
WINDHAVEN ESTATES SUBDIVISION - UNIT 1

Issue Date	Name	Lot #	Street Address
10/13/03	Tom Kelley Homes, Inc	9	104 Windridge Drive
10/13/03	Tom Kelley Homes, Inc	8	200 Windwood Way
10/20/03	Drew Rice Construction	11	100 Windridge Drive
10/24/03	Sutton, Jim & Debbie	7	109 Windridge Drive
11/06/03	Jones, Wallace	4	111 Windwood Way
12/10/03	Adkins, David	2	223 Wind Haven Drive
01/19/04	Samen, Moress	5	109 Windwood Way
02/13/04	Borjuce, J. C.	10	102 Windridge Drive
03/30/04	Design Traditions, Inc.	6	105 Windridge Drive
04/15/04	Speech, Al & Terry	5	103 Windridge Drive
04/30/04	Tom Kelley Homes, Inc	13	226 Wind Haven Drive
05/06/04	Joseph, Chorbel & Elizabeth	3	113 Windridge Drive
05/26/04	Kelley Beeasley, Inc.	7	100 Windwood Way
05/28/04	Design Essence, Inc.	12	224 Wind Haven Drive
03/17/05	Tom Kelley Homes, Inc	4	101 Windridge Drive
03/23/05	Design Traditions, Inc.	9	104 Windridge Drive

Total Lots Issued - 16

Graph 9 and Table 8

Graph 9 and Table 8 represents Barkley Woods Subdivision. This subdivision is the more recently approved and developed subdivision within the Northwest Service Area. It is an agricultural cluster subdivision with 1.0 acre residential lots. The characteristics of the development is the upscale estate-type homes in the range of 5,000-8,000 SF and price rance of $750,000 to $1,500,000. The tabulation of the issue-permits represents an approximate build out of 33% in 24 months.

Graph - 9

Building Permits Per Six Months After Issuance of Final Plat
Barkley Woods Subdivision
First Recorded October 2003
Total Number of Lots - 18

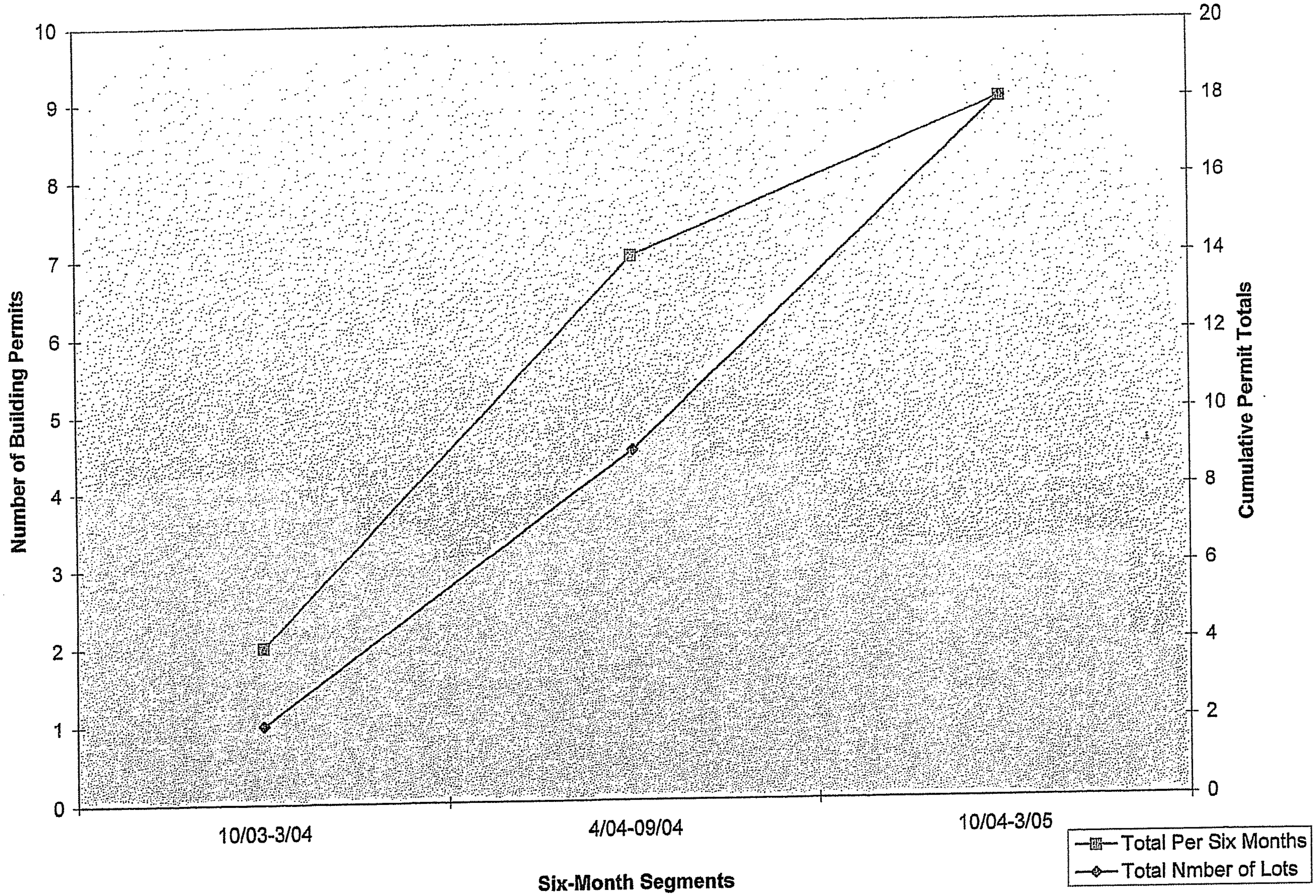


Table -8

Tabulation Summary
of
Issued Building Permits
for
BARKLEY WOODS SUBDIVISION

Issued Date	Name	Lot #	Street Address
02/23/04	Rutherford, Chris & Kelly		117 Creek Rock Circle
03/30/04	Thompson, Sean & Kimberly	56	111 Tugger Trail
04/22/04	Stanley, Gary & Beth	55	113 Tugger Trail
07/16/04	Knight, Wm. J.	23	107 Deerfield Circle
08/03/04	Phillips, Nicholas R.	35	109 Creek Rock Circle
08/09/04	Banta Homes, Inc.	38	306 Stonegate Driive
08/21/04	Knight, Billy	27	108 Creek Rock Circle
09/02/04	Bluegrass Fine Homes, Inc.	37	302 Stonegate Driive
09/07/04	Homes by Anderson - Tate, I	33	113 Creek Rock Circle
10/27/04	Dochterman, Darryl	62	305 Stonegate Driive
10/29/04	Klesk, Tim & Grace	39	308 Stonegate Driive
01/12/05	Seward, Tom	65	104 Stonewall
01/19/05	Tarvin, Dave	51	106 Tugger Trail
02/14/05	Perdue, Mimi & Loomi Hollis	52	108 Tugger Trail
02/15/05	Bluegrass Fine Homes, Inc.	45	410 Stonegate Driive
02/28/05	R Nicholas Phillips, LLC	7	203 Stonegate Driive
03/02/05	Banta Homes, Inc.	54	112 Tugger Trail
03/24/05	Century Builders	34	111 Creek Rock Circle

Total Lots Issued - 18

Graph 10, and Table 9

Graph 10 and Table 9 is included to represent the manner in which major subdivisions are developing and selling in recent years. Barkley Woods Subdivision is one of the more recent upscale 1-acre residential developments which has been platted in recent years. The final record plats for this development were recorded in October 2003. Graph 10 is the graphing of the lot sales per month and also showing the running cumulative total percentage of lots sold. The interesting point of this development is that during the time period of October 2003 to April 2004, a time period represented by 19 months, the development has reached 82% sell out. These graphs represent actual lot sales and one must realize that the lot, although sold, does not mean an immediate start of construction which subsequently equates to a demand for service connection and use of water. However, as shown by analysis of similar and prior developments, the rate of build out is ofttimes synonymous and parallel with the rate of lot sales. When one looks at the data in Table 3 for Barkley Woods, it represents that as of April 2005 thirteen meters have been initiated in the development. Of the 56 lots sold, this represents a 24% usage within the 17-month sale period. Also, one should note that meter service initiation does not begin with the issuance of the building permit and instigation of construction. Visual inspection of the area in the 3-month period of May 2005 through July 2005, indicates that there have been an additional 6 construction starts in this subdivision. The strong point is, that development and use demand is proceeding at an accelerated pace within the Northwest Service Area. This increased pace of demand has been represented by various subdivisions that have been brought online from the time period of 2000 to 2005. It appears that irregardless of the size or characteristic of the subdivision that this demand holds true across the board.

<u>**Graph -10**</u>

Barkley Woods Sales History

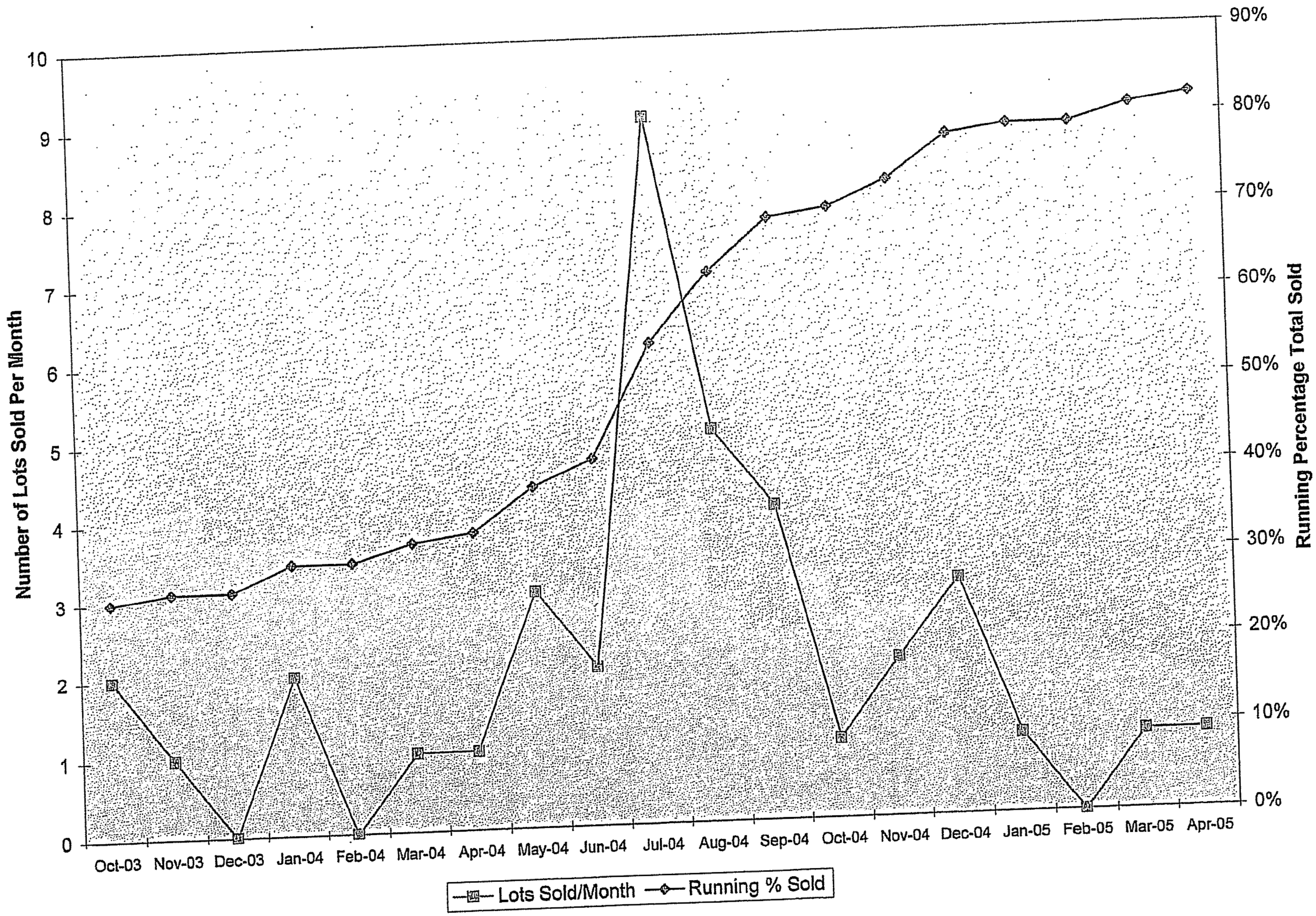


Table - 9

Barkley Woods Sales History

Month Sold	Number Sold Each Month	Running % Total Sold
Lots Reserved Before Final Plat		
May-03	10	15%
Jun-03	2	18%
Jul-03	1	19%
Aug-03	2	22%
Sep-03	1	24%
Sales After Final Plat Recorded October 2003		
Oct-03	2	27%
Nov-03	1	28%
Dec-03	0	28%
Jan-04	2	31%
Feb-04	0	31%
Mar-04	1	33%
Apr-04	1	34%
May-04	3	39%
Jun-04	2	42%
Jul-04	9	55%
Aug-04	5	63%
Sep-04	4	69%
Oct-04	1	70%
Nov-04	2	73%
Dec-04	3	78%
Jan-05	1	79%
Feb-05	0	79%
Mar-05	1	81%
Apr-05	1	82%

2003 Average 1 Acres Sale = $102,677

2004 Average 1 Acres Sale = $102,900

2005 Average 1 Acres Sale = $106,900

Out of a total of 67 homesites, only 11 remain unsold 17 months after final plat

VII. WATER USAGE

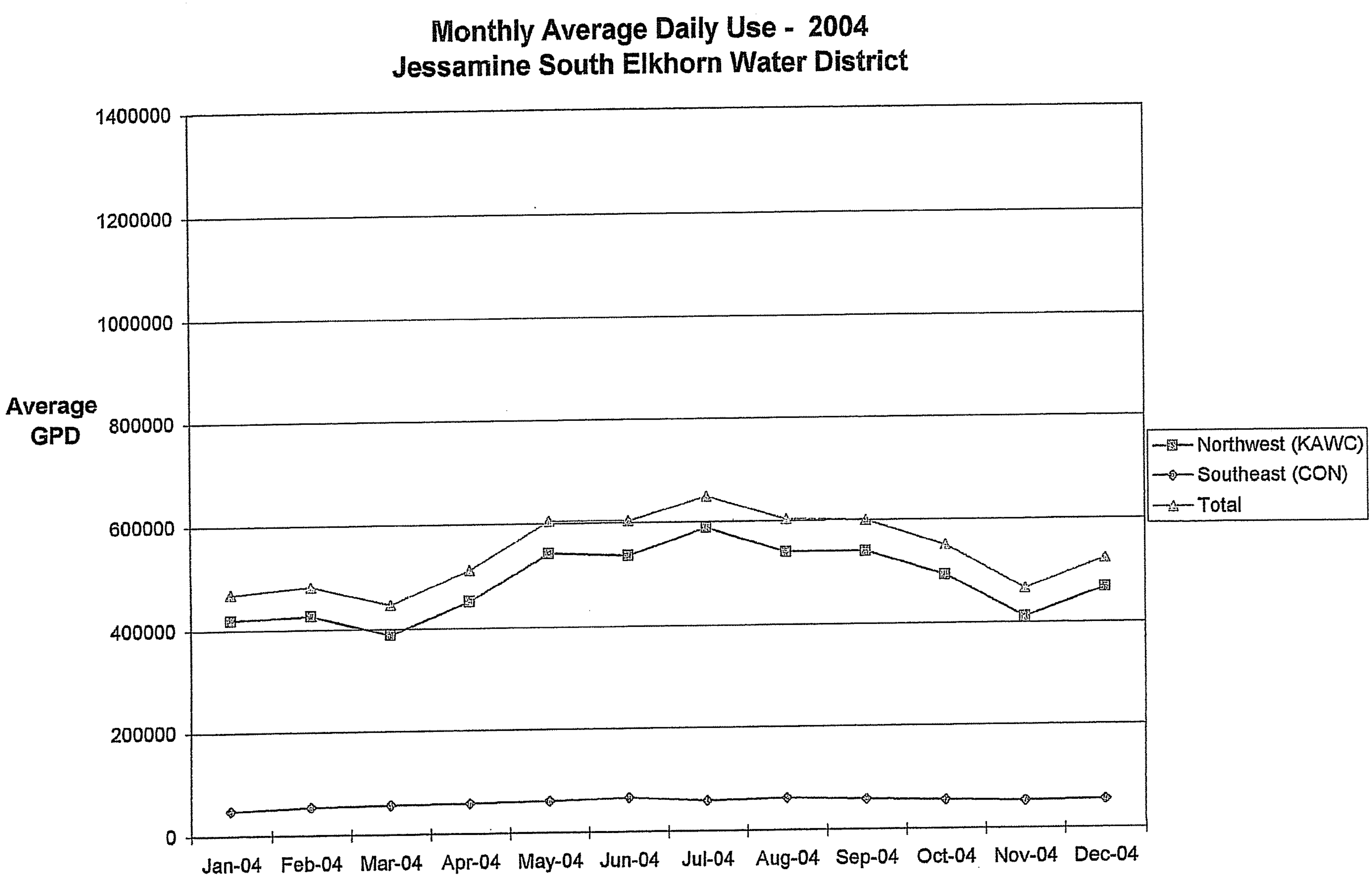
Graphs 11 and 12 are graphs of monthly average daily use for the individual years of 2004 and 2005. Graph 11 is from January to December of 2004, and Graph 12 is for January through December 2005.

The District has two supply sources. That being, the Kentucky American Water Company for the Northwest Service Area and City of Nicholasville for the Southeast Service Area. Each of those water sources are metered by separate meters. The Northwest Service Area being actually metered from two meter service points and the Southeast Service Area being metered from a single service point, but having dual meters.

Contained in Appendix B and C are the daily readings of each of these connection points along with the totals for each supplier. The daily average that is shown is the total daily average for both the Northwest and Southeast Service Areas. Graphs 11 and 12 also breaks down the monthly average for the individual service areas and shows these, as well as the monthly average for the total.

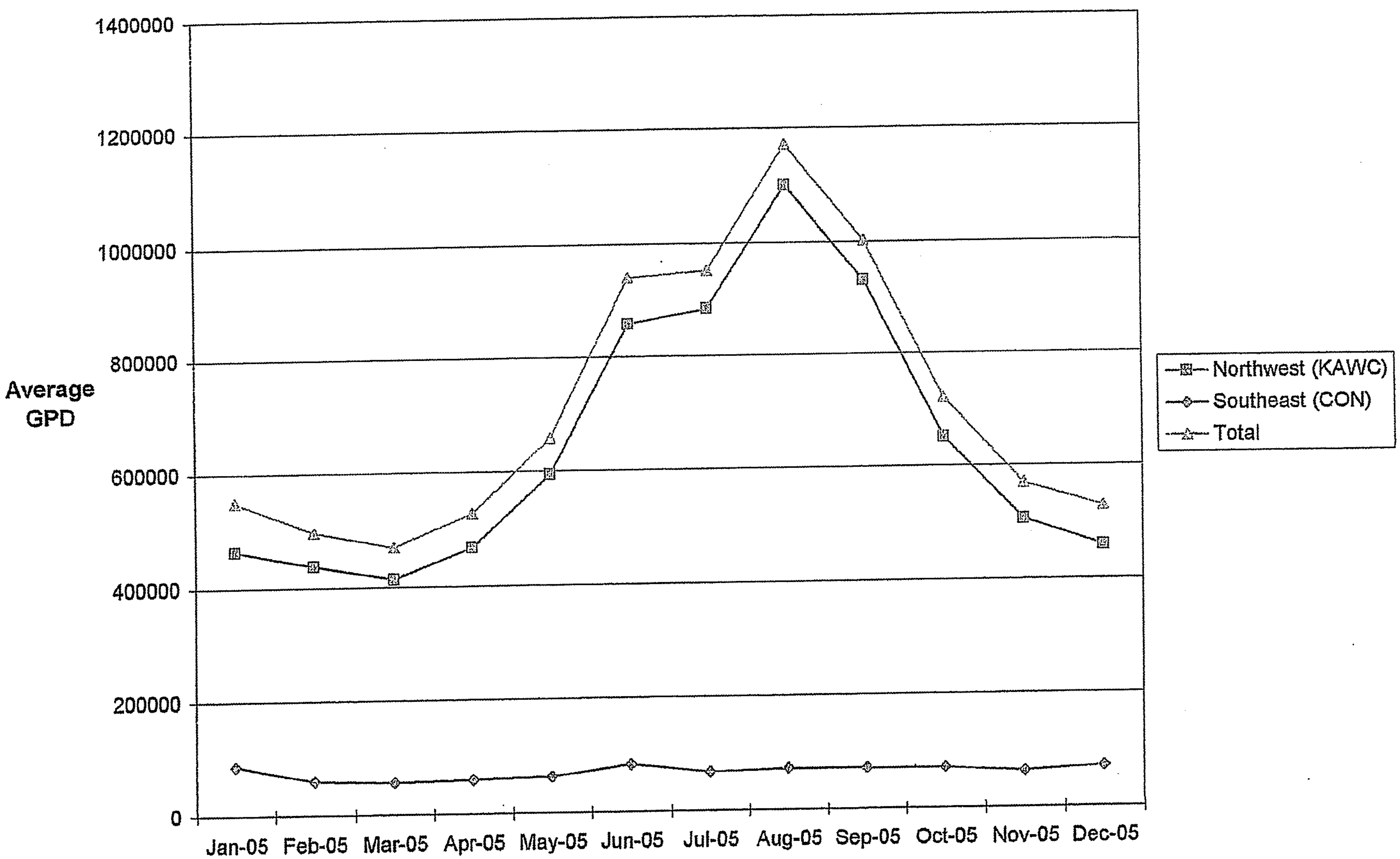
As is demonstrated by both the 2004 and 2005 graph, it is interesting to note that the Southeast Service Area demand is essentially constant. During 2004 there is little or no variation in the demand between the typically low demand winter months and the higher demand summer months. As previously discussed, this area has only recently been served by public potable water mains and has historically relied on cisterns for their water use. Consequently, one would derive that the citizens have

Graph 11


Monthly Average Daily Use - 2004
Jessamine South Elkhorn Water District
Average GPD
1400000
1200000
1000000
800000
600000
400000
200000
0
Jan-04
Feb-04
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Northwest (KAWC)
Southeast (CON)
Total

Graph 12

Monthly Average Daily Use - 2005
Jessamine South Elkhorn Water District



developed an age long habit of strict conservation on water use and therefore their consumption shows little or no variance with the season changes. Ironically, the 2005 graphing does show that there is perhaps a divergence from this wherein the summer month of June did show a slight but substantial increase over the prior month's usage. Interestingly enough, the maximum as of that time period was in the January time period with no explanation as to why this occurred relative to consumer use.

Graph 12 is a graphing of use within the District for 2005. Interestingly, this graph shows the high dominance of weather and seasonal variance to use within the Northwest Service Area. As shown, there is a substantial increase in water usage through this time period, beginning May through October, with the peak use being shown during the August period. This can be attributed directly to the historically dry conditions experienced in the District in the May to September period with the highest demand being in August. This is directly reflected by the water usage shown on the graph. During summer periods, historically the Northwest Service Area usage has shown that consumers typically increase their use in the early parts of the dry periods until such time that the severity of moisture conditions has stunted or laid dormant the majority of the landscape material, at that time the use will gradually diminish once the consumer has essentially given up on salvaging the landscape material.

Graph 13 is a comparison of the 2004 monthly average daily use wherein 2005 has been superimposed. These usages are the total usage of both the Northwest Service Area and the Southeast Service Area. Table 10 is a compilation of the actual totals taken from the monthly reading contained in Appendix B and C. These are represented solely for the purpose of depicting the substantial difference

Graph 13

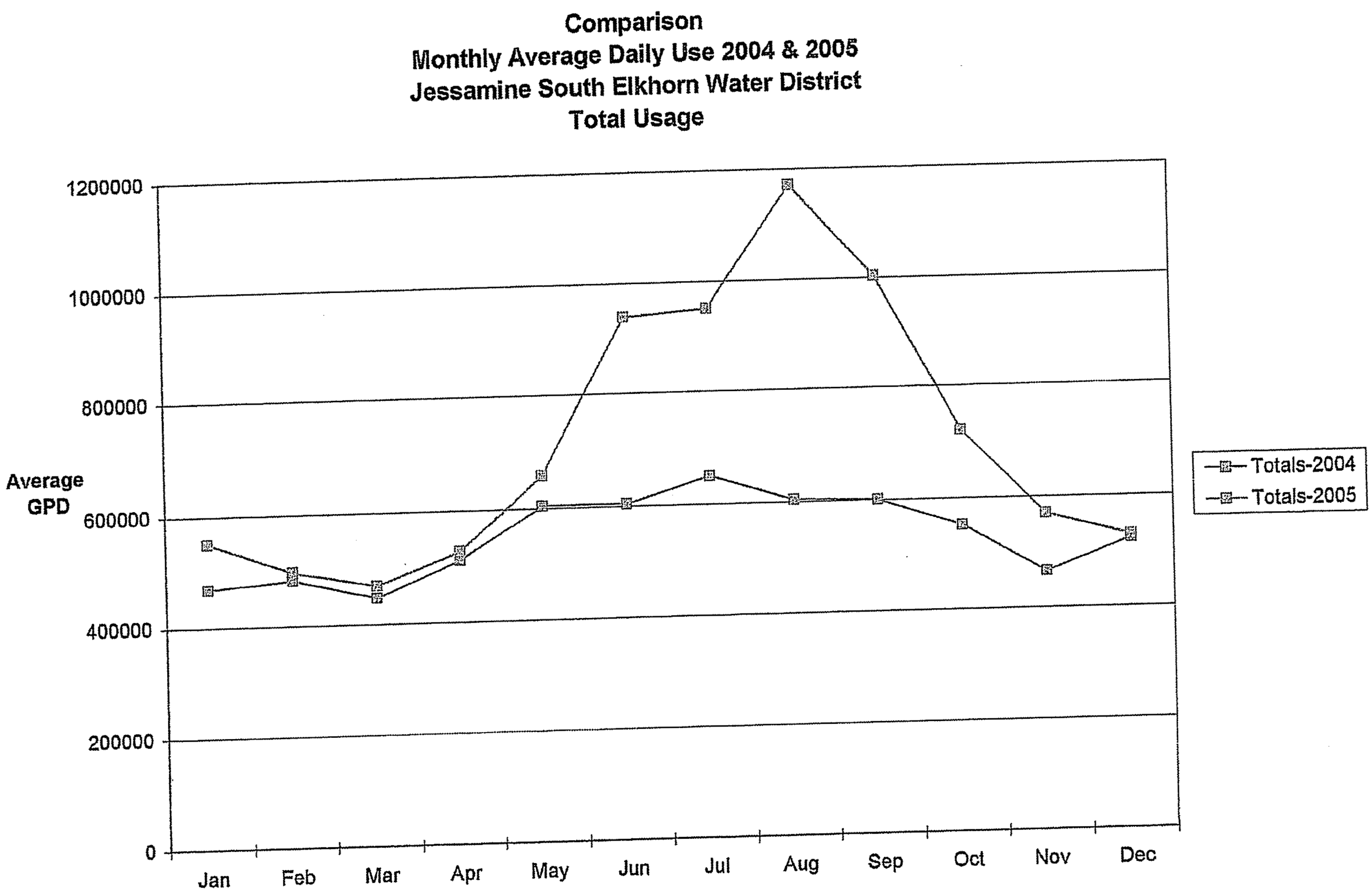

Comparison
Monthly Average Daily Use 2004 & 2005
Jessamine South Elkhorn Water District
Total Usage
Average GPD
1200000
1000000
800000
600000
400000
200000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Totals-2004
Totals-2005

Table - 10

Comparison
Monthly Use 2004 & 2005
Jessamine South Elkhorn Water District
TOTAL USAGE

	Monthly Totals 2004	Monthly Totals 2005	Percentage of Increase '04 vs: '05
January	468343	549444	17%
February	482445	496839	3%
March	446574	469711	5%
April	511579	526820	3%
May	604466	657955	9%
June	603970	939727	56%
July	648887	951606	47%
August	604218	1171307	94%
September	600671	1002301	67%
October	551240	720994	31%
November	465561	568978	22%
December	523682	528345	1%

between the same time periods of the May to September 2005 compared to the usages of the prior year. The percent increase of 2005 versus 2004 is shown for each month

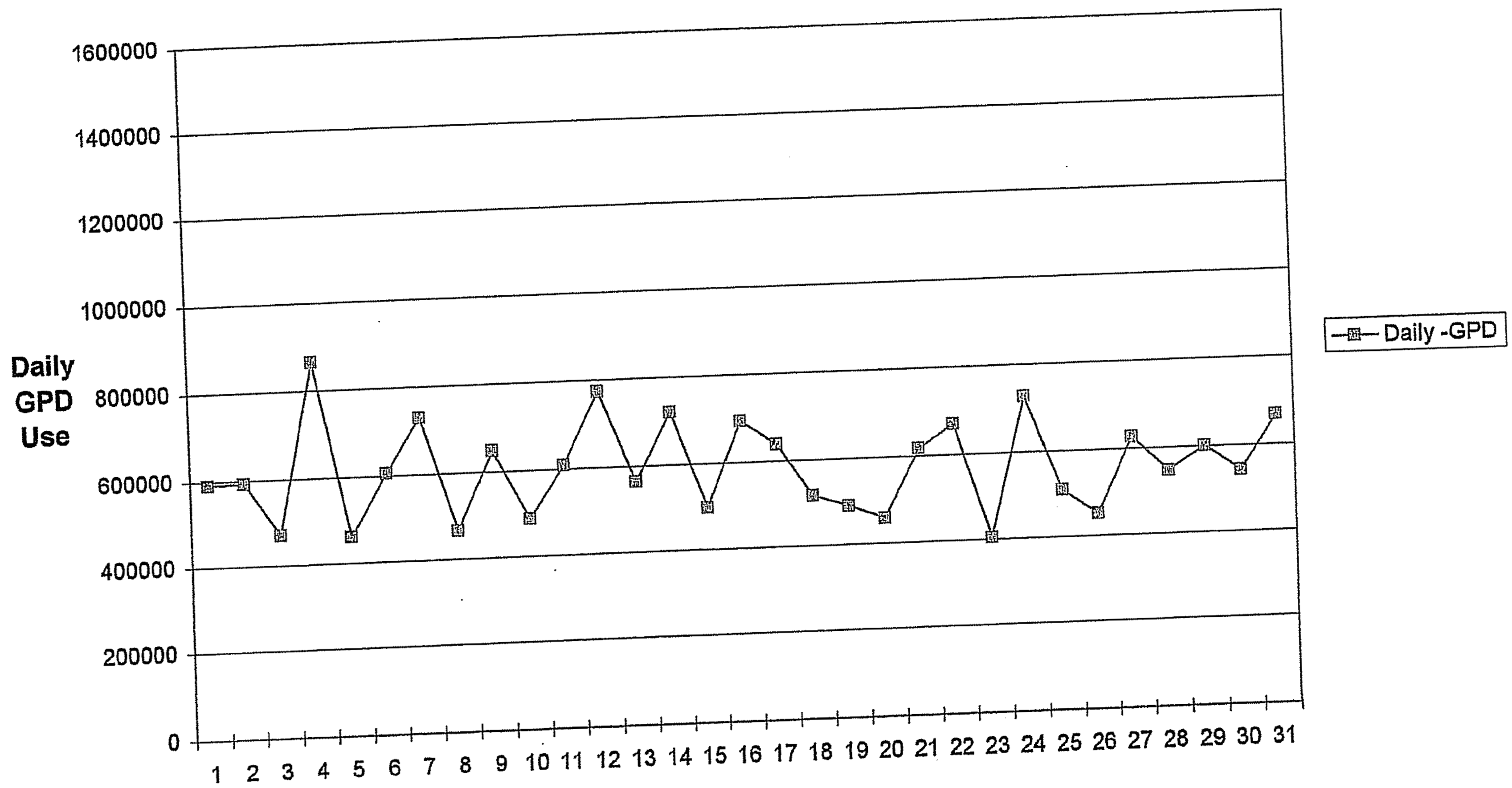
July has been demonstrated to be the high peak use month of the current test period. Graph 14 is a graph of the daily use for the month of July 2004. The graphing represents the consumption within the Northwest Service Area for this time period and varies from a low of 400,000 gallons per day(GPD) to an indicated high of approximately 850,000 GPD. Irrespective, the use through July 2004 shows it to be fairly stable and near the amount of 600,000 GPD range.

In comparison, Graph 15, a graph of the July 2005 average daily use of the Northwest Service Area and reflects a wide range of uses. Ranging from a low of approximately 500,000 GPD to a maximum peak in the range of 1,500,000 GPD which occurred on two separate days. In general, all but four days within the month occurred in the range at or greater than 600,000 GPD. The majority of the month occurring in the range of 800,000 GPD, plus.

Graph 16 is a comparison of the July 2004 and the July 2005 average daily use for the Northwest Service Area. This graph clearly exemplifies the effect of dry conditions on the customer use within this service area. Table 11 is a tabulation of the actual daily use for both July 2004 and July 2005. The graph clearly indicates that the Northwest Service Area is highly sensitive to weather conditions. Historically, there have been dry conditions occurring in the service area in a frequency of once every three to five years.

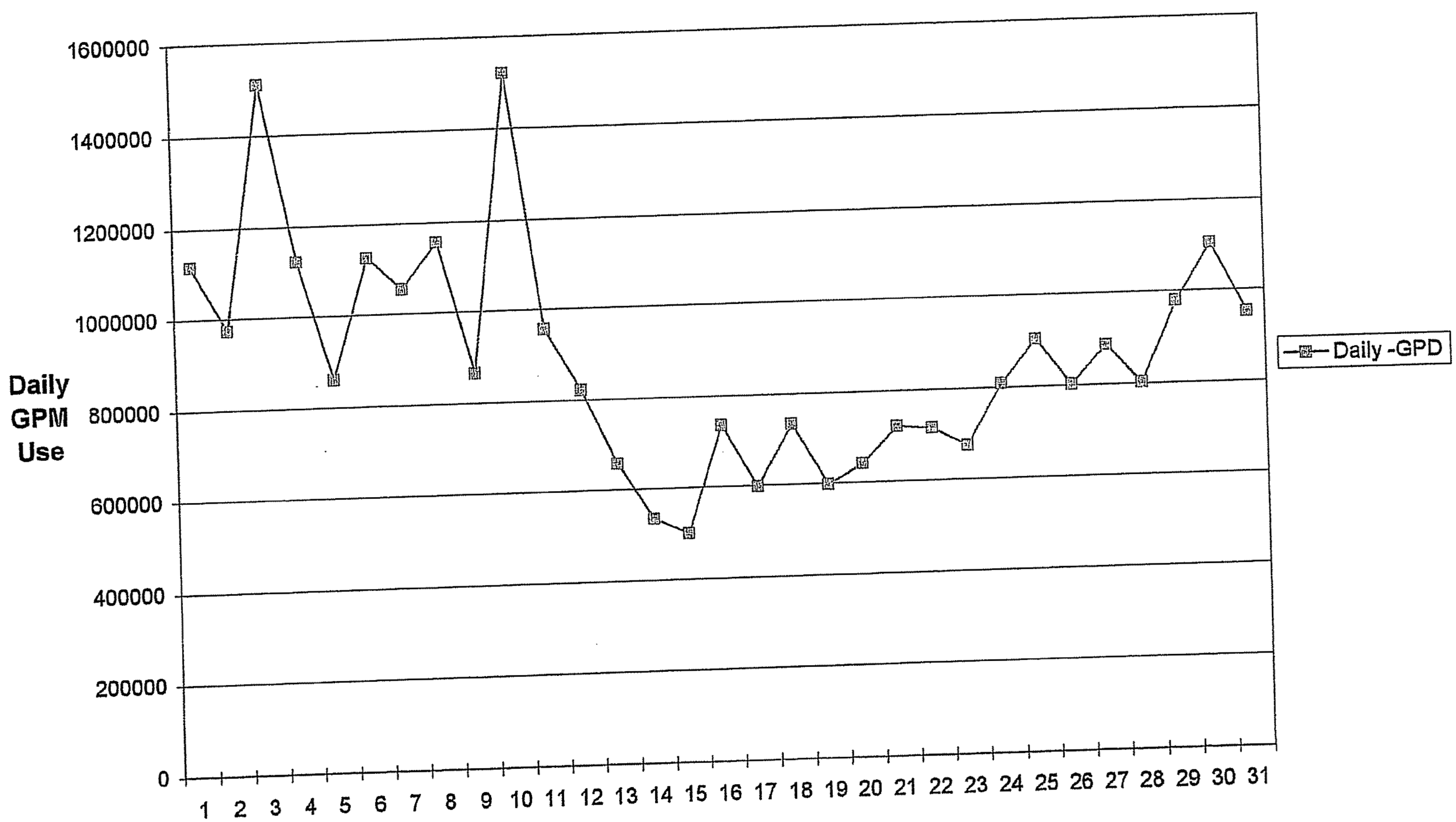
Graph 14

July - 2004
Daily Use - GPD
Northwest Service Area
Jessamine South Elkhorn Water District



Graph 15

July - 2005
Daily Use - GPD
Northwest Service Area
Jessamine South Elkhorn Water District



Graph 16

Comparison
July 2004 & July 2005
Daily Use - GPD
Northwest Service Area
Jessamine South Elkhorn Water District

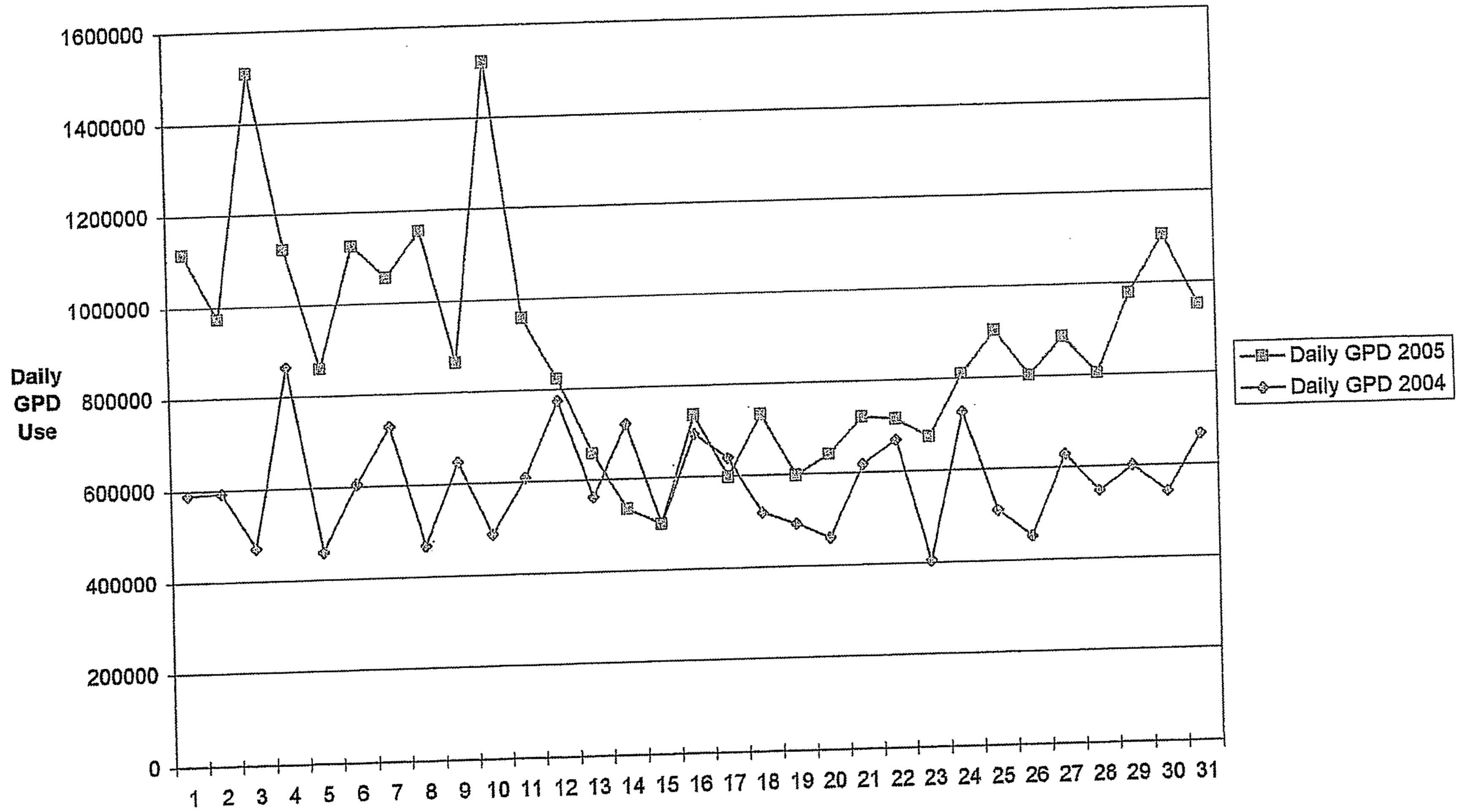


Table - 11

Comparison
2004 & 2005
July Daily Use
Northwest Service Area
Jessamine South Elkhorn Water District

Day of Month	Daily Use (GPD) July 2004	Daily Use (GPD) July 2005	Percentage of Increase '04 vs: '05
1	589500	1114125	89%
2	592125	972375	64%
3	470625	1511250	221%
4	864750	1120500	30%
5	460125	859875	87%
6	604875	1124250	86%
7	728625	1054500	45%
8	466875	1154700	147%
9	646875	864675	34%
10	486750	1521000	212%
11	608625	957000	57%
12	773250	821625	6%
13	562500	657000	17%
14	720000	533625	74%
15	498000	498375	0%
16	693375	735750	6%
17	638250	597000	94%
18	516750	733125	42%
19	490875	596625	22%
20	459375	640875	40%
21	616875	720525	17%
22	669375	714975	7%
23	405000	673500	66%
24	726750	808500	11%
25	508875	902625	77%
26	451875	801375	77%
27	627375	886125	41%
28	547125	802500	47%
29	600750	976875	63%
30	543000	1103250	103%
31	667125	949500	42%

Graph 17 is a compilation of the average daily use per customer in the Northwest Service Area for the time period of January 2001 through December 2005. Without the impact of dry conditions in May through July time period of 2005, one would expect that the graphing would be cyclic and would repeat itself during that time period. In fact when one views the time period from January 2004 through April of 2005, there is an essential cyclic reproduction of this usage with the exception of the months of January and February. As noted in the Southeast Service Area analysis of monthly usage, there is an unexplained condition that forced higher usage during the January/February 2005 period. This may be attributed to warmer winter months during this period, consequently with higher usage. But typically, these low use months of the year are not drastically dependant on weather conditions. Irrespective, the change between the January 2004 and January 2005, represents only a difference of approximately 30 gallons per customer use, and is not a significant over all demand. Table 12 is a tabular presentation of the average daily use per customer derived by dividing the total daily use (by month) in the Northwest Service Area by the then present total customer count in the Northwest Service Area. Table 13 presents the customer count breakdown between the Northwest and Southeast Service Areas, as well as the total customer count for the District, by month. Table 12 indicates the low use for the time period which occurred in March 2004 representing average daily use per customer of 220 GPD. This is in comparison of the highest use, which one would expect to occur in August 2005, of 575 GPD per customer.

Graph -17

2001-2005
Monthly Average Daily Use Per Customer
Northwest Service Area
Jessamine South Elkhorn Water District

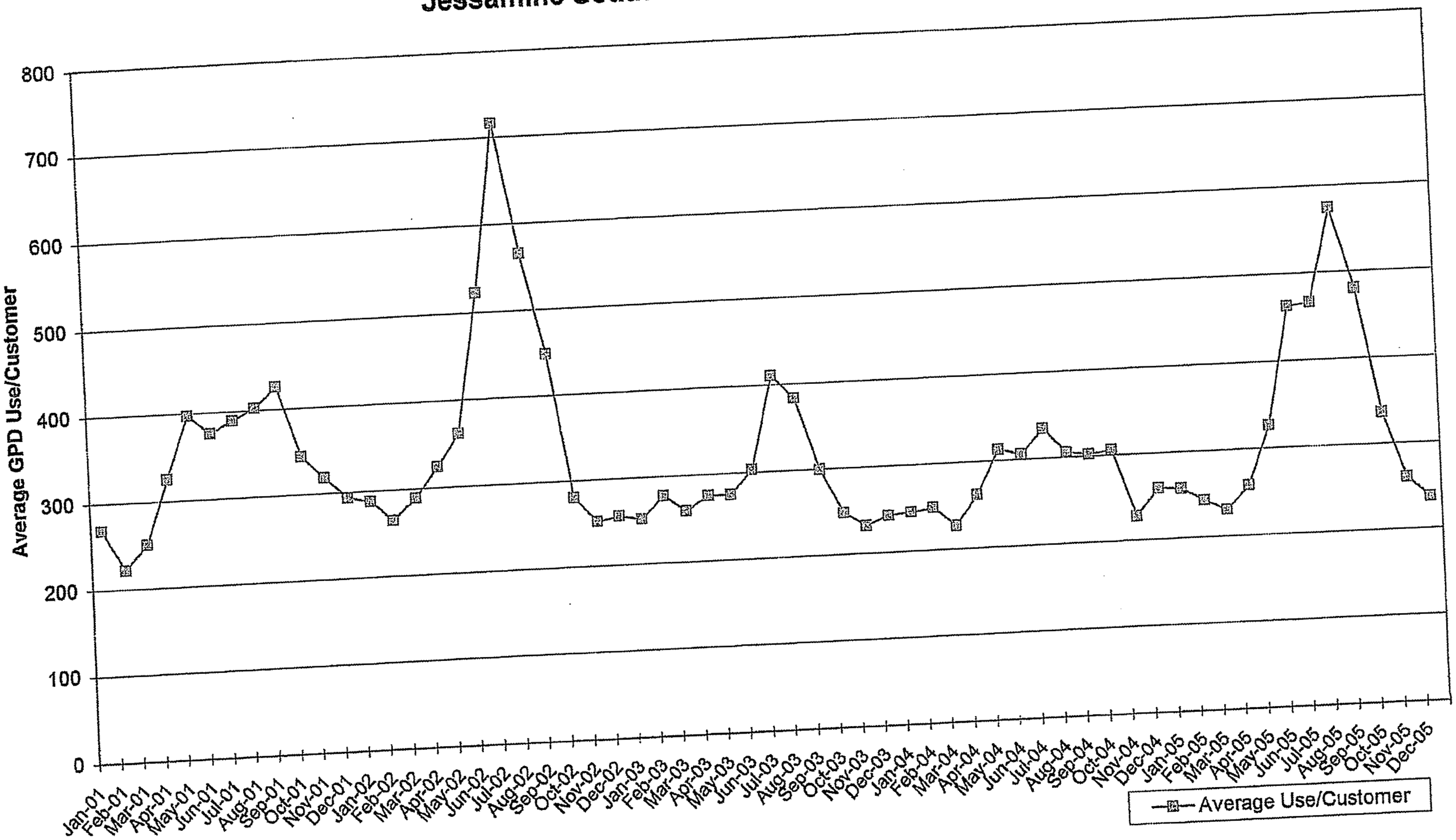


Table - 12

2001 - 2005
Average Daily Use Per Customer
Northwest Service Area
Jessamine South Elkhorn Water District

Month	Total Monthly Use (GPD)	Average GPD Daily	Number of Customers	Average Daily Use Per Customer (GPD)
Jan-01	12693375	409464	1527	268
Feb-01	9855750	339853	1534	222 *
Mar-01	11944500	385306	1541	250
Apr-01	16163125	505438	1558	324
May-01	19572375	631367	1591	397
Jun-01	17939625	597988	1595	375
Jul-01	19697250	635395	1636	389
Aug-01	20498250	661234	1645	402
Sep-01	20998500	699950	1645	426
Oct-01	17522250	565234	1647	343
Nov-01	15689250	522975	1647	318
Dec-01	14904600	480794	1639	293
Jan-02	14527275	468622	1630	287
Feb-02	12504000	431172	1630	265
Mar-02	14686500	473758	1637	289
Apr-02	15976500	532550	1648	323
May-02	18568125	598972	1662	360
Jun-02	26187900	872930	1672	522
Jul-02	36999225	1193523	1665	717
Aug-02	29208525	942210	1666	566
Sep-02	22541025	751368	1679	448
Oct-02	14669475	473209	1688	280
Nov-02	12634125	421138	1678	251
Dec-02	13372500	431371	1678	257
Jan-03	13110375	422915	1678	252
Feb-03	13455000	463966	1673	277
Mar-03	13454625	434020	1676	259
Apr-03	13859250	461975	1677	275
May-03	14373375	463657	1686	275
Jun-03	15396750	513225	1697	302
Jul-03	21774750	702411	1711	411
Aug-03	20395775	657928	1719	383
Sep-03	15498450	516615	1726	299
Oct-03	13192500	425565	1716	248
Nov-03	11946075	398203	1720	232
Dec-03	12883500	415597	1717	242
Jan-04	12980925	418740	1710	245
Feb-04	12375000	426724	1715	249
Mar-04	12037500	388306	1712	227
Apr-04	13537725	451258	1724	262
May-04	16787400	541529	1733	312
Jun-04	16074750	535825	1752	306
Jul-04	18236250	588266	1761	334
Aug-04	16744500	540145	1768	306
Sep-04	16208625	540288	1790	302
Oct-04	17088425	551240	1802	306
Nov-04	12325575	410853	1803	228
Dec-04	14470050	466776	1798	260
Jan-05	14377125	463778	1797	258
Feb-05	12244500	437304	1801	243
Mar-05	12823350	413656	1794	231
Apr-05	14013900	467130	1807	259
May-05	18438750	594798	1825	326
Jun-05	25743000	858100	1851	464
Jul-05	27408000	884129	1895	467
Aug-05	34088625	1099633	1913	575 **
Sep-05	27945400	931513	1937	481
Oct-05	20197950	651547	1943	335
Nov-05	15172050	505735	1945	260
Dec-05	14195250	457911	1936	237

* Low use 222 GPD - February, 2001
** High use 575 GPD - August, 2005

TABLE - 13

Jessamine South Elkhorn Water District
Customer History
2001 - 2005

Year		January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
2001	Northwest	1527	1534	1541	1558	1591	1595	1635	1645	1645	1647	1647	1639	1600
	Southeast	248	262	270	274	289	292	326	329	331	335	333	336	302
	Total	1775	1796	1811	1832	1880	1887	1961	1974	1976	1982	1980	1975	1902
2002	Northwest	1630	1630	1637	1648	1662	1672	1665	1666	1679	1688	1678	1678	1661
	Southeast	339	340	342	344	346	351	351	351	351	352	350	351	347
	Total	1969	1970	1979	1992	2008	2023	2016	2017	2030	2040	2028	2029	2008
2003	Northwest	1678	1673	1676	1677	1686	1697	1711	1719	1726	1716	1720	1717	1700
	Southeast	347	350	350	348	349	349	351	355	356	353	348	352	351
	Total	2025	2023	2026	2025	2035	2046	2062	2074	2082	2069	2068	2069	2050
2004	Northwest	1710	1715	1712	1724	1733	1752	1761	1768	1790	1802	1803	1798	1756
	Southeast	349	349	353	352	353	353	355	354	358	359	363	363	355
	Total	2059	2064	2065	2076	2086	2105	2116	2122	2148	2161	2166	2161	2111
2005	Northwest	1797	1801	1794	1807	1825	1851	1895	1913	1937	1943	1945	1935	1870
	Southeast	366	362	356	356	362	366	369	373	372	373	374	381	368
	Total	2163	2163	2150	2163	2187	2217	2264	2286	2309	2316	2319	2316	2238

VIII. WATER USAGE - SELECTED SUBDIVISIONS

The following Tables 14 through 19 and Graphs 18 through 23 are representations of the average daily usage per household through the months of 2005, for selected subdivision. Those subdivision which were selected for this study were:

Loc#	Name
15	Equestrian Estates
7	Champion Subdivision
4	Cambridge Subdivision
1	Barkley Woods Subdivision
12	Crosswoods Subdivision
26	Windhaven Subdivision

The geographical position of these subdivision are shown in Figure 2 (Page 15) and are cross-identified with this section by location number.

These subdivision were selected for this study on the basis of representing the existing average, as well as more recent subdivisions which are indicative of the anticipated future demands within the District. Each table and graph are color coded and that color coding is carried in subsequent sections throughout the remainder of this report that do comparative analyses of the usages within subdivisions. Some interesting aspect of annual usage are apparent when viewing the graphing of the usage for these representative subdivisions. Generally, the annual use indicates that during the first half of the year, usages are consistently close during the months January through May. This is reflected in all of the subdivision represented in this section. As generally expected, during the second half of the year and the hotter summer and early fall months, there is an increase usage of water due primarily to demand for irrigation of lawns and landscaping materials. The usages shown on this mapping does not include separately metered irrigation systems. The data that is represented here is the typical 5/8" X 3/4" residential meter. Interestingly, there are several subdivision that show extensive, high monthly usage during this June to November period.

One abnormality that appeared in this evaluation, was that which is represented by Crosswoods Subdivision (Graph 22). Crosswoods Subdivision was established in the early 1980's and was built out in the late 1990's. This particular section of the Crosswoods Subdivision is a portion represented by 66 households. The interesting aspect of this graphed usage, is that which is shown by almost consistent use of approximately 200 GPD/household, extending from January to December. There is, however, a significant increase in the July period, showing an average daily use of 340 GPD. Because of the age of this development and the almost total absence of any onsite irrigation systems, and coupled with the demographics of the constituency of the subdivision, it is anticipated that there would be very slight demand for heavy extraneous uses of water. Therefore, this is indicative of a subdivision that would only have a demand for domestic potable use, which is reflected by its almost constant amount of use. Interestingly also, the usage is about 1/3 less than the accepted per daily average use of 300 GPD. This could be further explained by the demographics of the subdivision which is essentially older, retired people that do not have at-home children. Consequently, their daily demands are considerably less.

This is in contrast to the more recent, upscale developments which are represented by subdivisions such as Barkley Woods. In comparison with the Crosswoods development that showed an

Table - 14

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Equestrian Estates

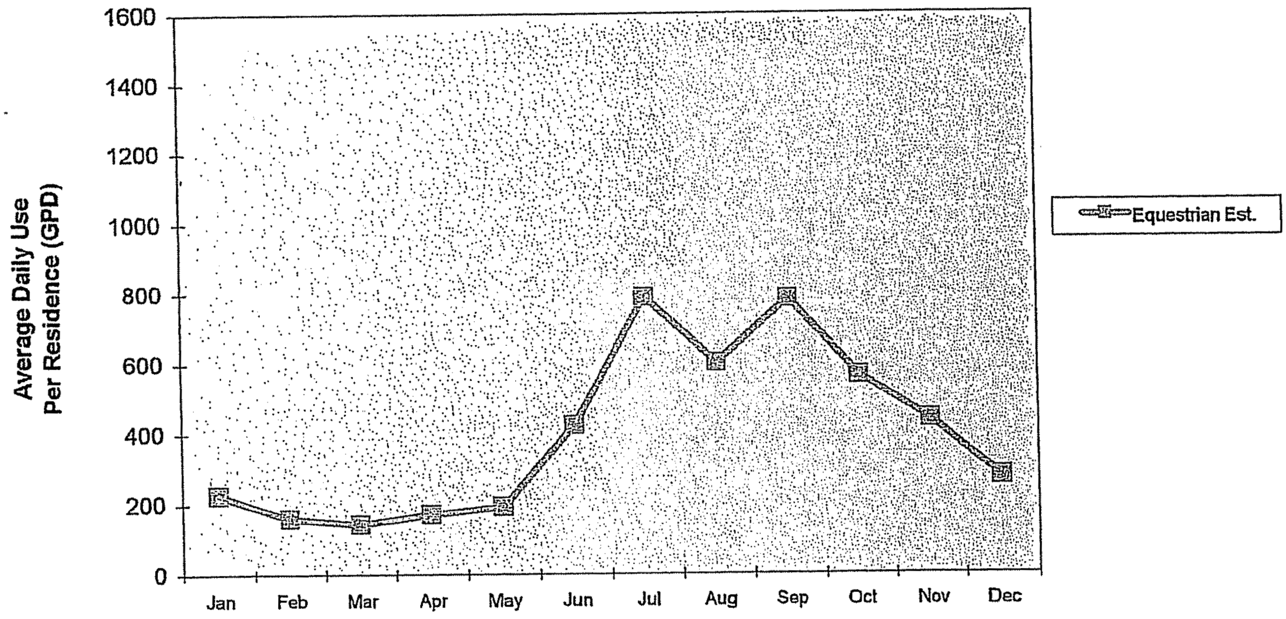
	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	78	543530	225
Feb	78	347640	159
Mar	78	347390	144
Apr	80	409530	171
May	81	482680	192
Jun	88	1113950	422
Jul	94	2285950	784
Aug	96	1783530	599
Sep	97	2271000	780
Oct	99	1722030	561
Nov	100	1306550	436
Dec	99	843340	275
Totals	1068	13457120	

Average # Households 89 (1068 ÷ 12)

Average Daily Usage Per Household 414 (13457120 ÷ 89 ÷ 365)

Graph - 18

Equestrian Estates Subdivision
Average Daily Usage
2005



Location # 15 & # 16 shown in Figure 2, Page 15

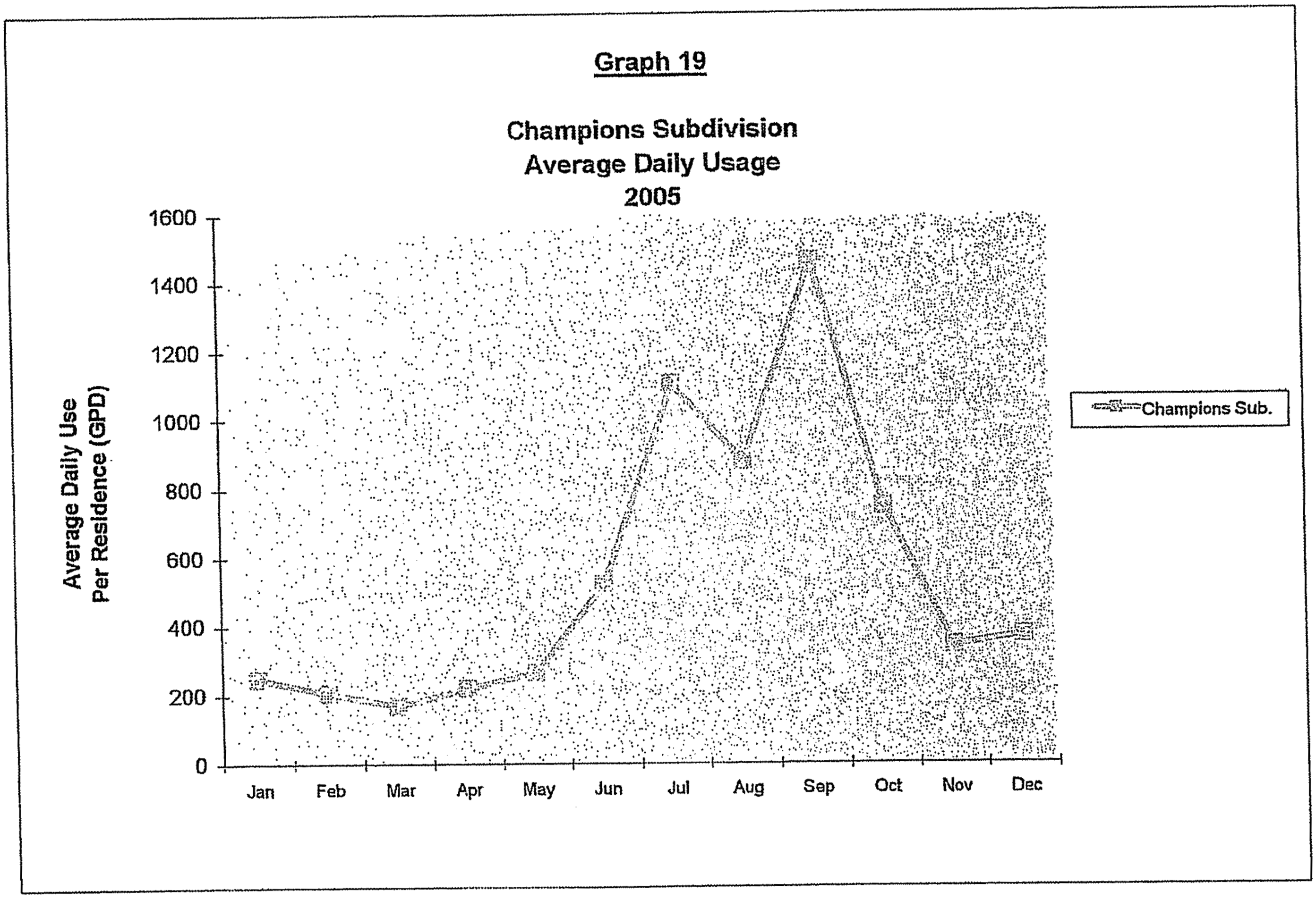
Table - 15

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Champions Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	65	497030	247
Feb	65	372170	204
Mar	65	338350	168
Apr	65	424800	218
May	65	529970	263
Jun	69	1078030	521
Jul	74	2529090	1102
Aug	74	2010240	876
Sep	75	3280570	1458
Oct	74	1702200	742
Nov	73	742150	339
Dec	66	753080	368
Totals	830	14257680	

Average # Households 69 (830 ÷ 12)

Average Daily Usage Per Household 566 (14257680 ÷ 69 ÷ 365)



Location # 7 shown in Figure 2, Page 15

Table - 16

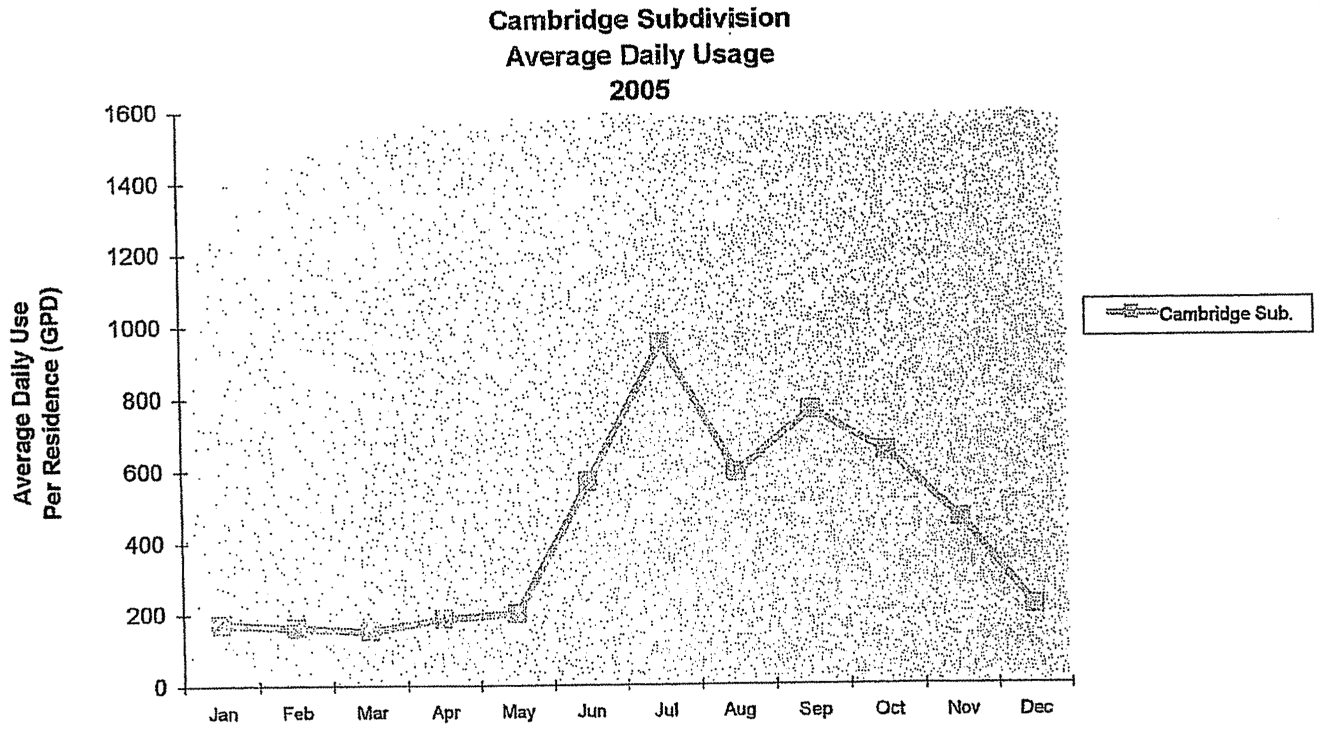
Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Cambridge Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	41	217580	171
Feb	40	181590	162
Mar	39	183010	151
Apr	39	216350	185
May	41	253610	200
Jun	47	799400	567
Jul	57	1677960	950
Aug	58	1061120	590
Sep	64	1461980	761
Oct	67	1346880	648
Nov	68	941890	462
Dec	59	399000	218
Totals	620	8740370	

Average # Households 52 (620 ÷ 12)

Average Daily Usage Per Household 461 (8740370 ÷ 52 ÷ 365)

Graph - 20



Location # 15, 4, 5, & 6 shown in Figure 2, Page 15

<u>Table - 17</u>

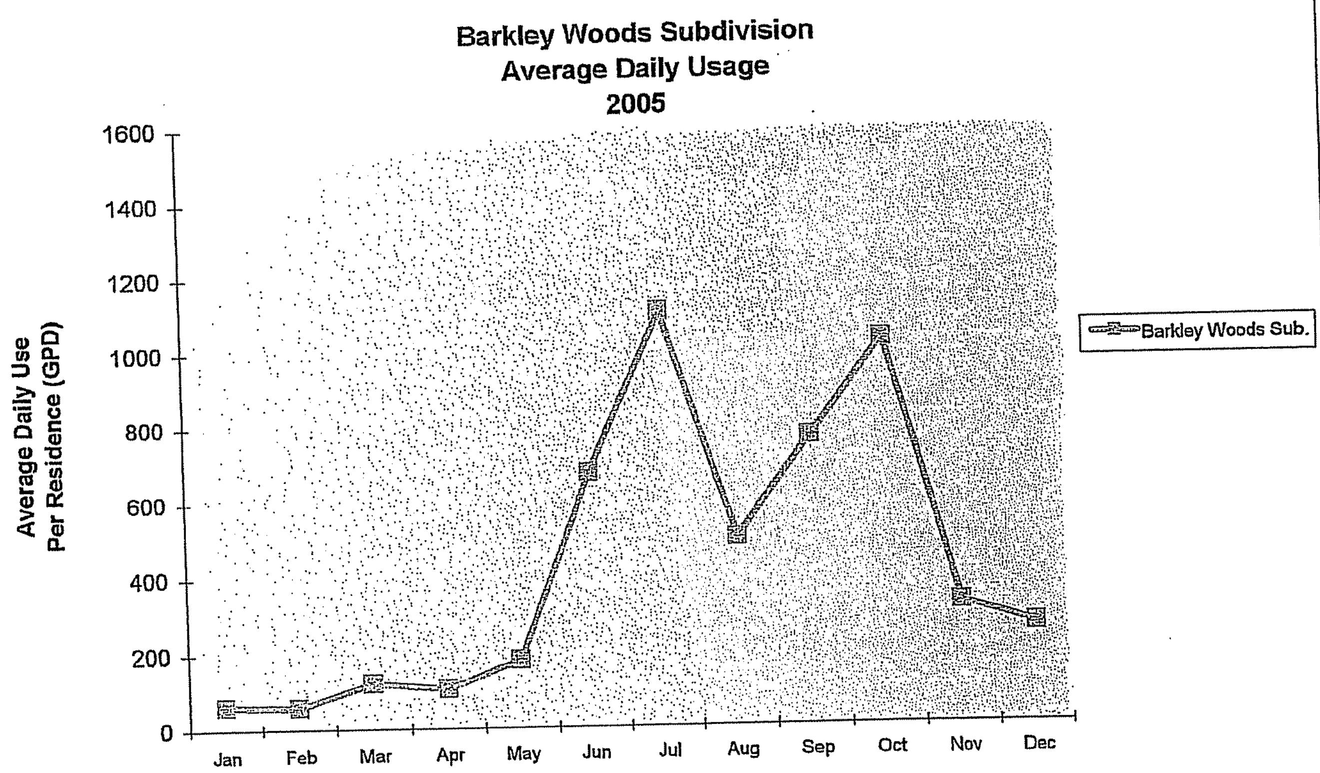
Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Barkley Woods Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	6	11200	60
Feb	8	12600	56
Mar	7	26120	120
Apr	8	25170	105
May	9	49820	179
Jun	11	222060	673
Jul	19	648290	1101
Aug	20	306330	494
Sep	21	480270	762
Oct	23	729610	1023
Nov	24	229470	319
Dec	26	210160	261
Totals	182	2951100	

Average # Households 15 (182 ÷ 12)

Average Daily Usage Per Household 539 (2951100 ÷ 15 ÷ 365)

<u>Graph - 21</u>



Location # 1 shown in Figure 2, Page 15

Table - 18

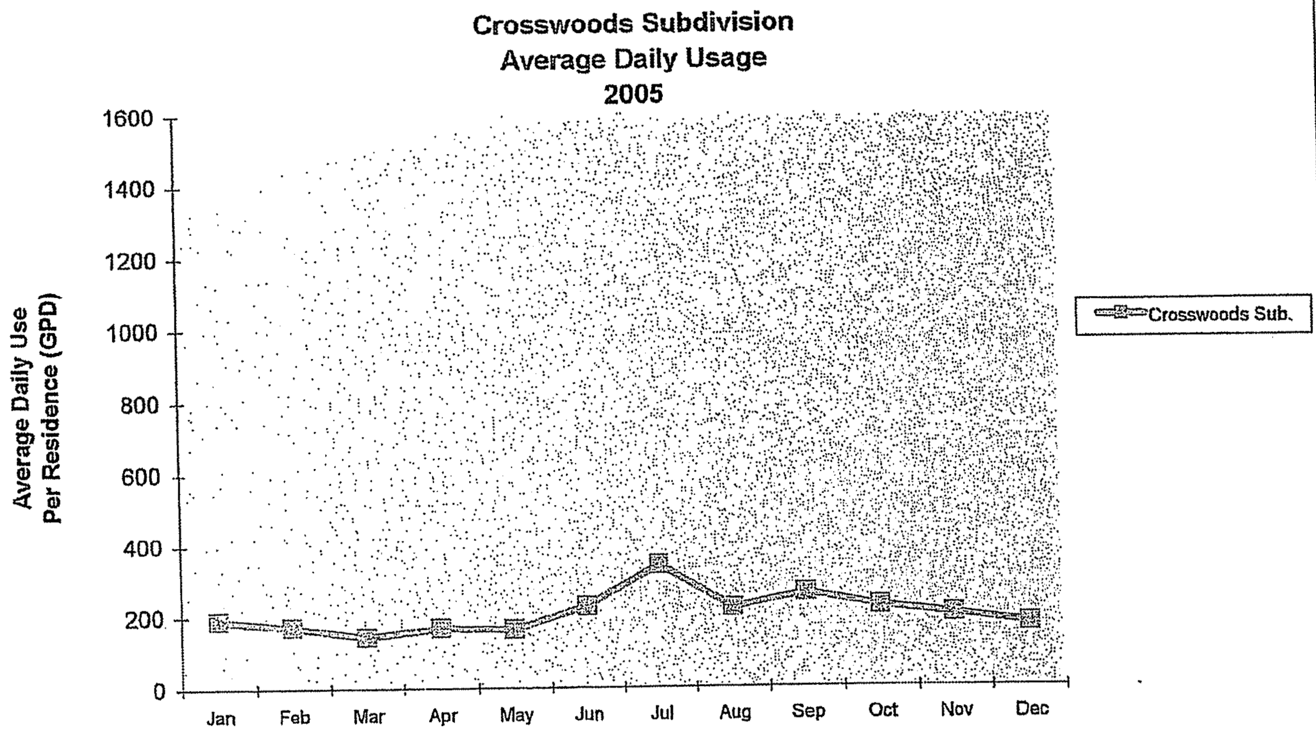
Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Crosswoods Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	66	386230	189
Feb	66	315310	171
Mar	66	292250	143
Apr	66	330050	167
May	66	333640	163
Jun	66	446900	226
Jul	66	695110	340
Aug	66	449120	220
Sep	66	513420	259
Oct	66	453750	222
Nov	66	397670	201
Dec	66	356190	174
Totals	792	4969640	

Average # Households 66 (792 ÷ 12)

Average Daily Usage Per Household 206 (4969640 ÷ 66 ÷ 365)

Graph - 22



Location # 15, 11 & 12 shown in Figure 2, Page 15

Table - 19

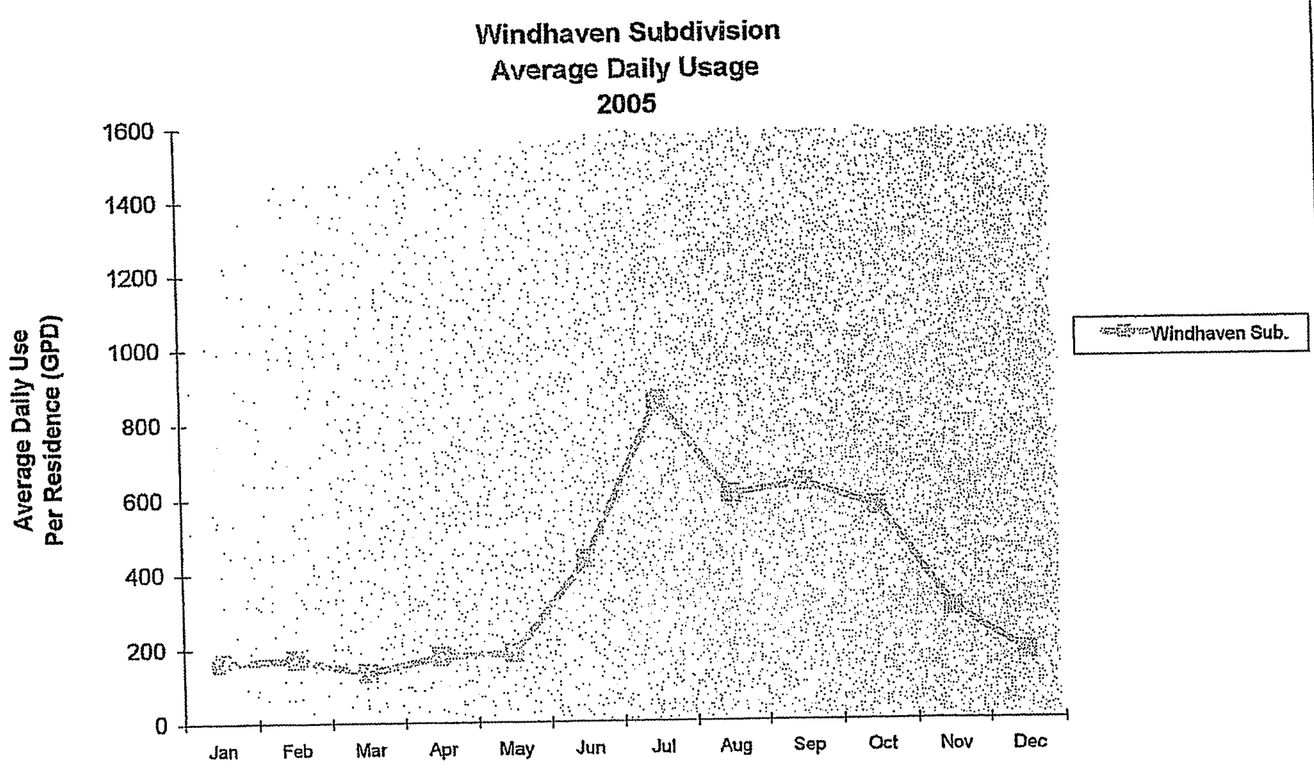
Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Windhaven Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	51	253270	160
Feb	51	240540	168
Mar	51	210620	133
Apr	51	267330	175
May	51	290550	184
Jun	53	690600	434
Jul	53	1405810	856
Aug	55	1030340	604
Sep	58	1099070	632
Oct	59	1040550	569
Nov	58	516250	297
Dec	59	325040	178
Totals	650	7369970	

Average # Households 54 (650 ÷ 12)

Average Daily Usage Per Household 374 (7369970 ÷ 54 ÷ 365)

Graph - 23



Location # 26 & 27 shown in Figure 2, Page 15 average daily use in July of 340 GPD, the corresponding use in Barkley Woods is 1,001 GPD. Not only is this period use approximately three times as great, but it also shows that the high peak use period does not occur in a single month, but rather extends from the June to November time period. The other subdivisions within the study area, also reflect this high peak usage between the June to November time period.

Following is a grouping of graphs (24-35) and tables (20-25) which show comparative usage between the totality of these selected subdivisions and individually selected users within those subdivision. These pages are a combination of graphing and tables of current and some that have previously been shown in the study. The individual graphs of these particular items, which are plotted singly at a large scale, can be found in Appendix D of this report.

Each of the pages show a combined table and graphing of the total use of each selected study subdivision. The page shows one graph that is a graphing of the average daily usage of all the selected accounts subdivisions and that is compared to the individual graphing of the selected accounts. In most of the subdivisions, there were five (5) randomly selected accounts taken in each of the subdivisions and the average daily use of those five accounts were plotted in comparison with average daily use of all the subdivisions. Also, each of the selected accounts were graphed individually on a combined graph.

Interestingly, the graphing of the combined average of both the total households in the subdivisions and the five (5) randomly selected accounts follows almost identically in shape and in most cases, in quantity. There are some expected abnormalities in the account and those occur predominately in the higher use developments such as, Champions and Barkley Woods.

This disparity in usage is further reinforced by the plotting of the randomly selected individual accounts. When the selected accounts graphings are viewed, it is quite apparent that in all of the subdivisions, with the exception of Crosswoods, there is a great disparity between the usage of these selected accounts. They run in the normal range of almost constant usage to extremely high peak uses between the high use summer months. In each development, one can find only one, or possibly two, consistent accounts, with the other four accounts varying drastically in their usages. As previously mentioned though, the only exception to that is the Crosswoods Subdivision. However, when you view that subdivision, it is even indicative of higher usages by two of the selected accounts which shows extremely high use peaks during the July to September time period. One interesting abnormality in the Crosswoods evaluation though, is the high peak usage in December of two of the selected accounts. As was previously discussed there are, under some situations, unanticipated extremely high usage in December periods.

Table 26 is a monthly compilation of the total usage and converted average daily use for the six study subdivisions. This table shows the monthly and average daily usage for these subdivision for each month of the year through the year of 2005. In addition, the lower portion of the table shows the total annual usage of each of these subdivisions and a converted average daily use with a projected flow amount which equates to the average daily use in gallons/day to a gallon/minute equivalent. These same factors are explained for the maximum and minimum month for each of these subdivisions which are indicated in the central portion of the lower part of the table. Also as was discussed, the average use of the annual high period use zone of June to November was calculated and that average daily use equivalent in gallons/minute flow shown. The purpose in determining the average daily use in a converted GPM flow rate is to derive an equivalent value that can be established as a design parameter, not only for future hydraulic analyses of the District, but also to equate it to the daily storage demands of the District.

Graph 36 shows the average daily use comparison of the selected subdivisions. Evaluating the average daily flow of all the selected subdivisions and removing the highest and lowest use of the represented study zones equates to an approximate average daily use per residence of 450 GPD. When compared to the data in Table 12, which shows that the highest peak use during the 2005 test year was 575 GPD being the average daily use per customer for the entire Northwest Service Area. This event occurred in August 2005.

The KDOW "rule of thumb" for peak demand flow is ten times the square root of the number of users, expressed as GPM. Applying this "rule of thumb" to the 2005 Northwest customer base of 1936 users equates to a 325 GPD per capita daily use. There are two indications to be derived from this data.

One, from KDOW "rule of thumb", which equates to peak use and if expanded to an equivalent daily use, it should be considerably higher that the actual measured use. Peak periods when compared to actual average use should be greater by a peaking factor of 1.5 to 2.5 times. Using this peaking factor, this would equate to an average daily use of 130 to 215 GPD. When comparing this to the actual average daily use as shown by Tables 12 and 26, it is readily apparent that this "rule of thumb" is not applicable to the Jessamine South Elkhorn Water District, because the actual use is much higher than the "rule of thumb" calculation.

Secondly, the value figure determined by this "rule of thumb" is peak flow. Conversely, if we evaluate measured average per capita daily use for different demand conditions, (i.e.; average, high, low) and then convert to flow, we get an indication of relative demand flows. This information is given in Table 26 and is reflective of the subdivision which represent the anticipated growth of the District. The range in flow values reaches from a low of 0.09 GPM to a high of 1.01 GPM. Based on AWWA, Manual M32, "Distribution Network Analysis for Water Utilities", which states;

> "However, if a distribution system can operate satisfactorily under the most limiting and most severe demand conditions, it will operate satisfactorily for all conditions. For this reason, the demand conditions most limiting to the performance of system components should be established, and computer model runs should represent system operations at these most limiting conditions."

It is the premise of this report that the limiting demand condition for design of future demands of the Jessamine South Elkhorn Water District is that demand which is represented by the average of the highest use months and the highest month usage. This is shown in Table 26 under the column of Average High Use which has an average value of 0.42 GPM and maximum month which has an average value of 0.63 GPM.

Based on the overall District peak use, and the indicative high demand peak use of the selected subdivisions, it would seem reasonable to establish a figure of 400 GPD as the expected storage design demand of the per household requirement in the Northwest Service area.

Table-14

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Equestrian Estates

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	78	543530	225
Feb	78	347640	[illegible]
Mar	78	347390	144
Apr	80	409530	[illegible]
May	81	482680	[illegible]
Jun	88	1113950	[illegible]
Jul	94	2285950	[illegible]
Aug	96	1783530	[illegible]
Sep	97	2271000	[illegible]
Oct	99	1722030	[illegible]
Nov	100	1306550	[illegible]
Dec	99	843340	[illegible]
Totals	1068	13457120	

Average # Households 89 (1068 + 12)

Average Daily Usage Per Household 414.00 (13457120 + 89 + 365)

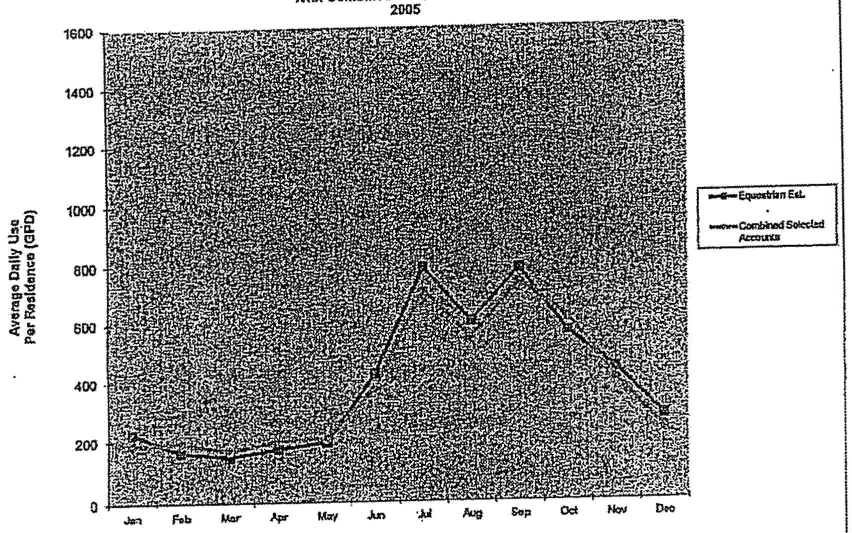
Table-20

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	5530	178	2400	77	9780	315	7320	236	3790	[illegible]	28820	186
Feb	3900	139	1780	64	12460	445	5740	205	2880	[illegible]	26760	191
Mar	4000	129	1440	46	9860	318	6580	212	3580	[illegible]	25450	[illegible]
Apr	4560	152	2030	68	11760	392	7230	241	3820	[illegible]	29400	196
May	3670	118	1310	42	11250	363	6480	209	9020	[illegible]	31730	205
Jun	4660	155	7490	250	13370	446	16270	542	14500	[illegible]	56290	376
Jul	19970	644	5190	167	17860	576	43390	1400	23560	[illegible]	109970	709
Aug	8740	282	6750	218	14790	477	44180	1425	9710	[illegible]	84170	543
Sep	30510	1017	8620	287	19750	658	44370	1479	7440	[illegible]	110690	738
Oct	2920	94	18450	595	20020	646	25680	828	27470	[illegible]	94540	610
Nov	3470	116	1930	64	19180	639	15190	506	20280	[illegible]	60050	400
Dec	3080	99	2320	75	17800	674	7910	255	4500	[illegible]	35610	230
Totals	95010		59710		177670		230340		130550		693480	

Graph-24

Equestrian Estates Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph -25

Equestrian Estates Subdivision
Average Daily Usage
With Selected Accounts
2005

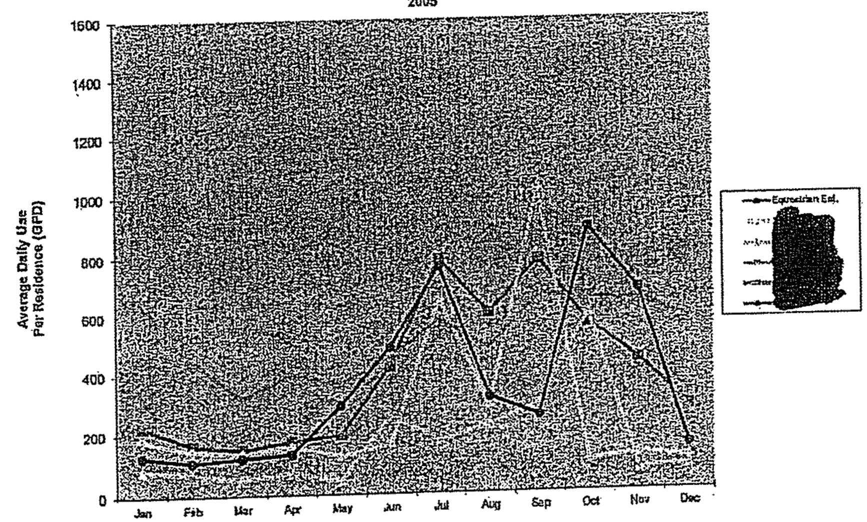


Table-14

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Equestrian Estates

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	78	543530	[illegible]
Feb	78	347640	[illegible]
Mar	78	347390	[illegible]
Apr	80	409630	[illegible]
May	81	482680	[illegible]
Jun	88	1113950	[illegible]
Jul	94	2285950	[illegible]
Aug	96	1783530	[illegible]
Sep	97	2271000	[illegible]
Oct	99	1722030	[illegible]
Nov	100	1306550	[illegible]
Dec	99	843340	[illegible]
Totals	1068	13457120	

Average # Households .89 (1068 ÷ 12)

Average Daily Usage Per Household 414.00 (13457120 ÷ 89 ÷ 365)

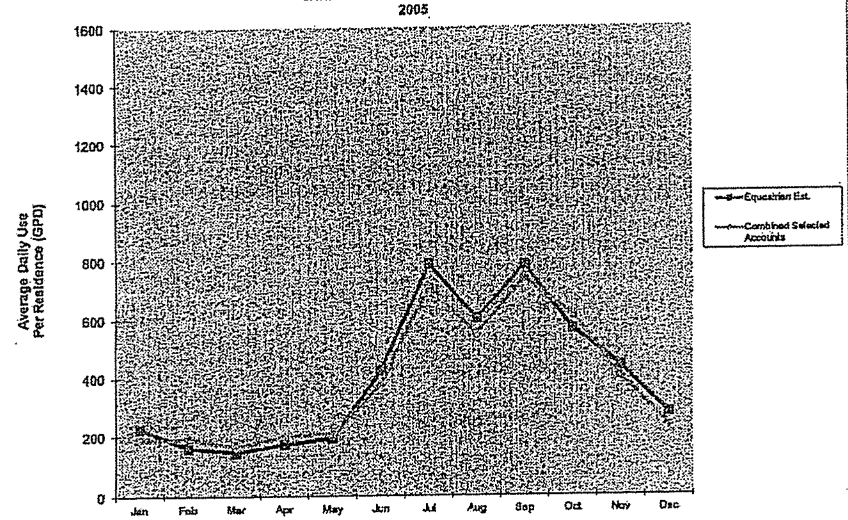
Table-20

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	5530	178	2400	77	9780	315	7320	236	3790	[illegible]	28820	186
Feb	3900	139	1780	64	12460	445	5740	205	2880	[illegible]	26760	191
Mar	4000	129	1440	46	9860	318	6580	212	3580	[illegible]	25450	184
Apr	4560	152	2030	68	11760	392	7230	241	3820	[illegible]	29400	196
May	3670	110	1310	42	11250	363	6480	209	9020	[illegible]	31730	205
Jun	4660	156	7490	250	13370	446	16270	542	14500	[illegible]	56290	375
Jul	19970	644	5190	167	17860	576	43390	1400	23560	[illegible]	109970	709
Aug	8740	282	6750	218	14790	477	44180	1425	9710	[illegible]	84170	543
Sep	30510	1017	8620	287	19750	658	44370	1479	7440	[illegible]	110690	738
Oct	2920	94	18450	595	20020	646	25680	828	27470	[illegible]	94540	610
Nov	3470	116	1930	64	19160	639	15190	506	20280	[illegible]	60050	400
Dec	3080	99	2320	75	17800	574	7910	255	4500	[illegible]	35610	230
Totals	85010		59710		177870		230340		130550		693480	

Graph-24

Equestrian Estates Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 25

Equestrian Estates Subdivision
Average Daily Usage
With Selected Accounts
2005

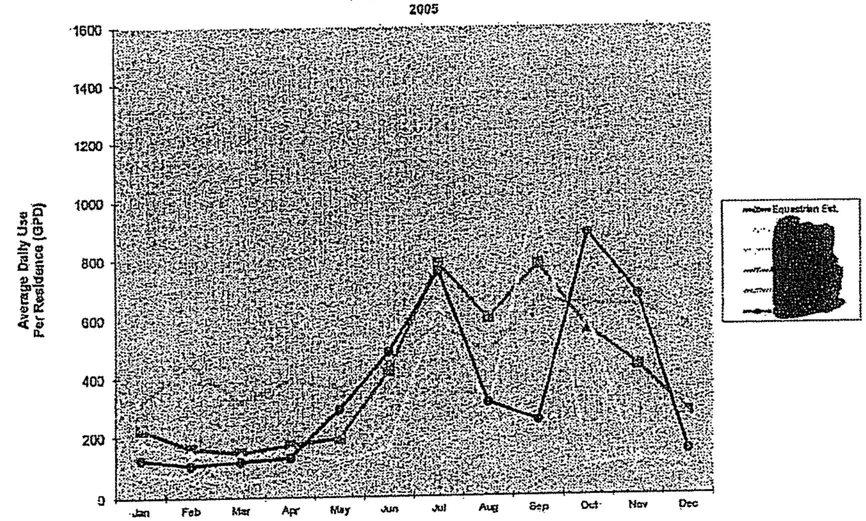


Table-15

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Champions Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	65	497030	247
Feb	65	372170	204
Mar	65	338350	168
Apr	65	424800	218
May	65	529970	263
Jun	69	1078030	521
Jul	74	2529090	1102
Aug	74	2010240	876
Sep	75	3280570	1458
Oct	74	1702200	742
Nov	73	742150	339
Dec	66	753080	368
Totals	830	14257680	

Average # Households 69 (830 ÷ 12)

Average Daily Usage Per Household 566 (14257680 ÷ 69 ÷ 365)

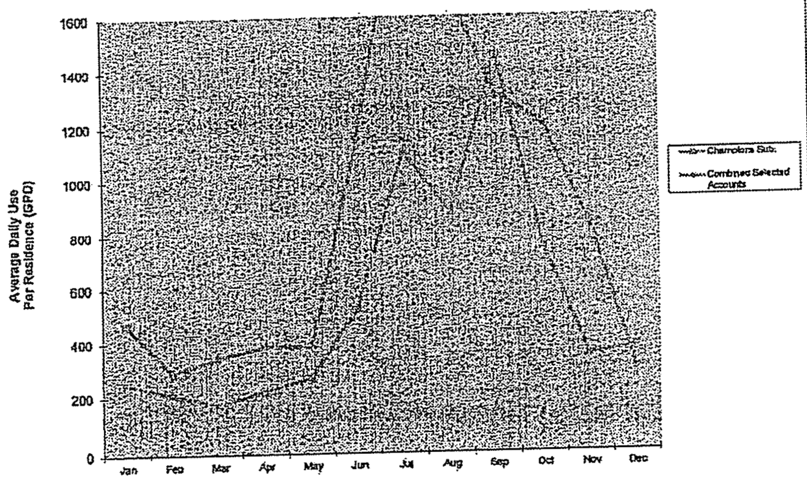
Table-21

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	48190	1555	8540	275	6860	221	5380	174	3270	[illegible]	72240	466
Feb	12720	454	8350	298	10970	392	4170	149	3720	[illegible]	39930	285
Mar	28730	927	6230	201	10300	332	3780	122	3730	[illegible]	62770	340
Apr	31590	1053	7290	243	8620	287	4810	160	4970	[illegible]	57280	382
May	28130	907	9550	308	10240	330	4890	168	5830	[illegible]	68640	378
Jun	45070	1502	10370	346	13080	436	7660	256	96680	[illegible]	172860	1162
Jul	70210	2265	7930	256	10610	342	7320	236	225870	[illegible]	321940	2077
Aug	43020	1388	14770	476	7810	252	7480	241	192230	[illegible]	265310	1712
Sep	44270	1476	18050	602	17020	567	7610	254	108460	[illegible]	195410	1303
Oct	50570	1631	8460	273	15530	501	7010	226	105300	[illegible]	186870	1206
Nov	33180	1106	10230	341	11220	374	4900	163	65080	[illegible]	124610	831
Dec	15110	487	6980	225	6330	204	4420	143	11850	[illegible]	44690	288
Totals	450790		116750		128590		69430		826990		1592550	

Graph - 26

Champions Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 27

Champions Subdivision
Average Daily Usage
With Selected Accounts
2005

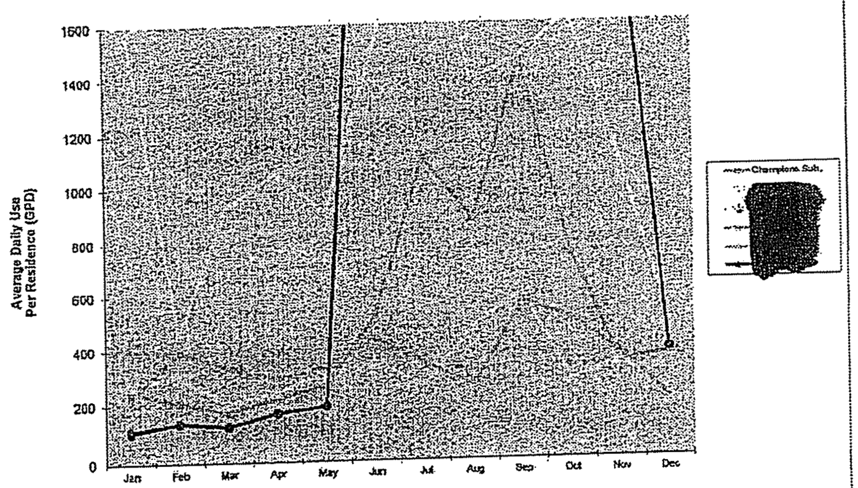


Table-16

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Cambridge Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	41	217580	171
Feb	40	181690	162
Mar	39	183010	151
Apr	39	216350	185
May	41	253610	200
Jun	47	799400	567
Jul	57	1677960	950
Aug	58	1061120	590
Sep	64	1461980	761
Oct	67	1346840	648
Nov	68	941890	462
Dec	68	399000	218
Totals	620	8740370	

Average # Households 52 (620 ÷ 12)

Average Daily Usage Per Household 461 (8740370 ÷ 52 ÷ 365)

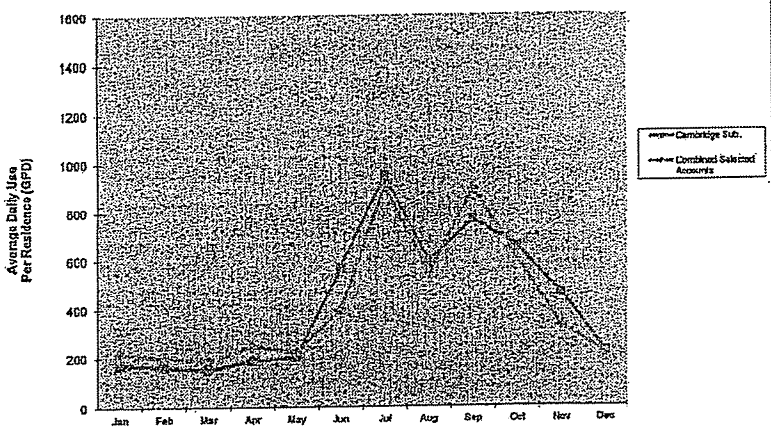
Table-22

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	3290	108	8700	281	6470	209	8350	269	6850	[illegible]	33660	217
Feb	4090	146	7370	263	4860	174	6780	242	4750	[illegible]	27860	199
Mar	3400	110	9300	300	4820	155	5080	164	5910	[illegible]	28510	184
Apr	4950	165	8410	280	5910	197	10890	363	6540	[illegible]	36710	245
May	3950	127	7760	250	4420	143	9290	300	8650	[illegible]	34060	220
Jun	8400	280	9250	308	6200	207	8010	267	27090	[illegible]	58950	393
Jul	17650	569	7300	235	68560	2212	16720	539	29790	[illegible]	140020	903
Aug	7890	255	6810	220	45170	1457	6890	222	17600	[illegible]	84360	544
Sep	12250	408	11870	396	80940	2698	10190	340	18500	[illegible]	133750	892
Oct	6650	215	9320	301	40400	[illegible]	9740	314	27830	[illegible]	93940	606
Nov	7770	259	8080	269	3950	[illegible]	6770	226	21860	[illegible]	48420	323
Dec	7870	254	9210	297	5010	162	6310	204	4950	[illegible]	33350	215
Totals	88170		103370		276710		105020		160310		753500	

Graph - 28

Cambridge Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 29

Cambridge Subdivision
Average Daily Usage
With Selected Accounts
2005

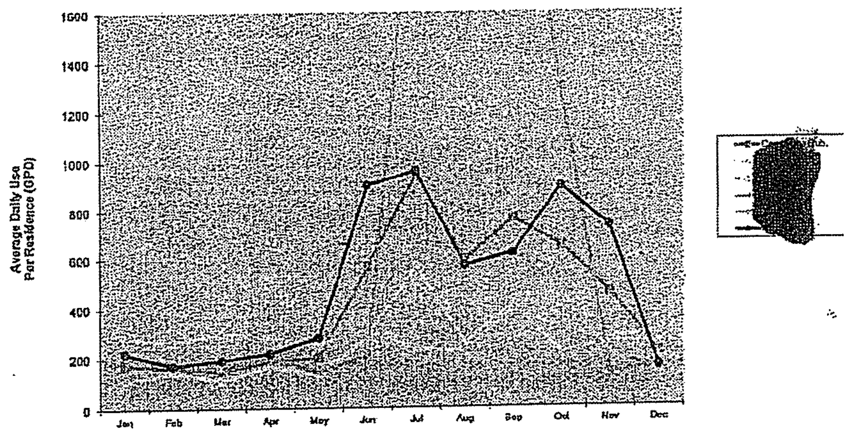


Table-17

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Barkley Woods Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	6	11200	[redacted]
Feb	8	12600	[redacted]
Mar	7	26120	[redacted]
Apr	8	25170	[redacted]
May	9	49820	[redacted]
Jun	11	222080	[redacted]
Jul	19	648290	[redacted]
Aug	20	306330	[redacted]
Sep	21	480270	[redacted]
Oct	23	729610	[redacted]
Nov	24	229470	[redacted]
Dec	26	210160	[redacted]
Totals	182	2951100	

Average # Households 15 (182 ÷ 12)

Average Daily Usage Per Household 539 (2951100 ÷ 15 ÷ 365)

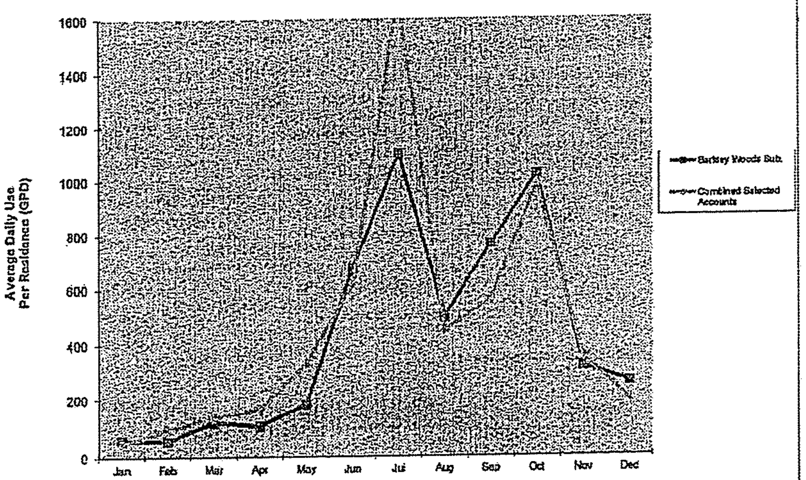
Table-23

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	3930	127	1590	51	50	2	200	6	5770	47
Feb	2910	104	7160	256	0	0	420	15	10490	94
Mar	3400	110	7740	250	4320	139	1070	35	16530	133
Apr	4020	134	10180	339	4660	155	640	21	19500	163
May	3830	124	31800	1026	4280	138	800	26	40710	328
Jun	8630	288	59550	1935	3650	122	2330	78	74160	618
Jul	10310	333	117990	3806	19990	645	60150	1940	208440	1681
Aug	3690	116	36290	1171	8680	280	6840	221	55400	447
Sep	3310	110	50420	1681	7210	240	6140	205	67080	559
Oct	3140	101	94760	3057	19840	640	4350	140	122090	1985
Nov	9810	327	26240	875	2940	98	2930	98	41920	349
Dec	3420	110	9480	306	8000	261	3690	119	24670	199
Totals	60300		453200		83700		89560		686760	

Graph - 30

Barkley Woods Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 31

Barkley Woods Subdivision
Average Daily Usage
With Selected Accounts
2005

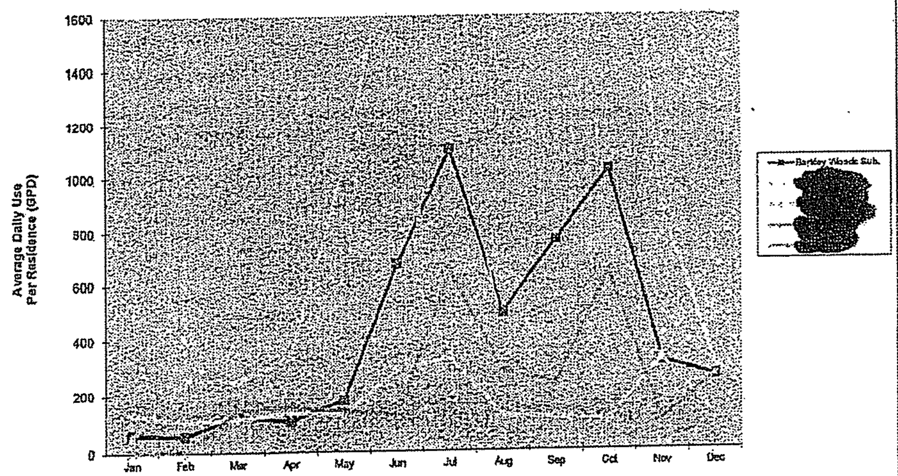


Table-18

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Crosswoods Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	66	386230	[illegible]
Feb	66	315310	[illegible]
Mar	66	292250	[illegible]
Apr	66	330050	[illegible]
May	66	331640	[illegible]
Jun	66	446900	[illegible]
Jul	66	695110	[illegible]
Aug	66	449120	[illegible]
Sep	66	513420	[illegible]
Oct	66	453750	[illegible]
Nov	66	397670	[illegible]
Dec	66	356190	[illegible]
Totals	792	4969640	

Average # Households 66 (792 ÷ 12)

Average Daily Usage Per Household 206 (4969640 ÷ 66 ÷ 365)

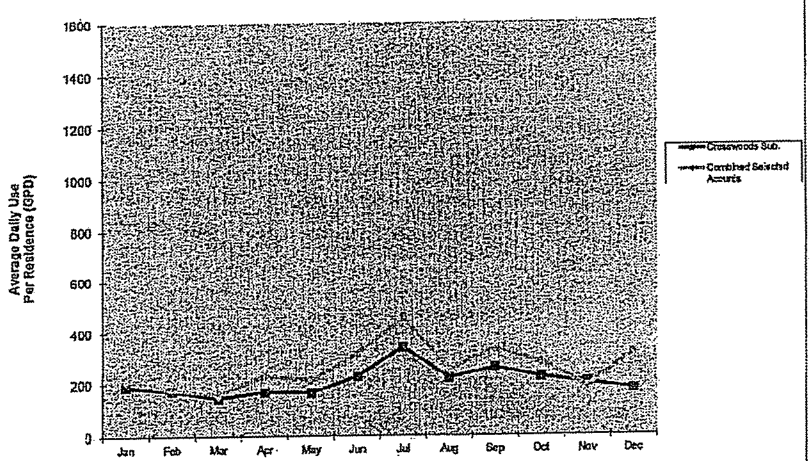
Table-24

Average Usage 2005
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	5260	170	6500	210	10510	339	4420	143	6620	[illegible]	33310	215
Feb	2270	81	5880	210	7070	253	2450	88	6810	[illegible]	24480	175
Mar	3610	116	6030	195	6810	220	4650	150	3200	[illegible]	24300	157
Apr	3930	131	5590	186	8650	288	7100	237	9170	[illegible]	34440	230
May	4360	141	7200	232	8700	281	5680	183	7000	[illegible]	32940	213
Jun	3460	115	9020	301	10460	349	5150	172	18940	[illegible]	47030	314
Jul	5810	187	17920	578	11210	362	3910	126	31830	[illegible]	70680	456
Aug	3870	125	13680	441	6760	218	3950	127	10550	[illegible]	38790	250
Sep	3960	132	16250	542	7990	266	4770	159	16670	[illegible]	49640	331
Oct	4600	148	8750	282	8550	276	7360	237	13730	[illegible]	42990	277
Nov	4530	151	6400	213	8460	282	2350	78	6010	[illegible]	27750	185
Dec	3840	124	18980	612	5210	168	3240	105	17430	[illegible]	48700	314
Totals	49500		122180		100380		55030		147960		475050	

Graph - 32

Crosswoods Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 33

Crosswoods Subdivision
Average Daily Usage
With Selected Accounts
2005

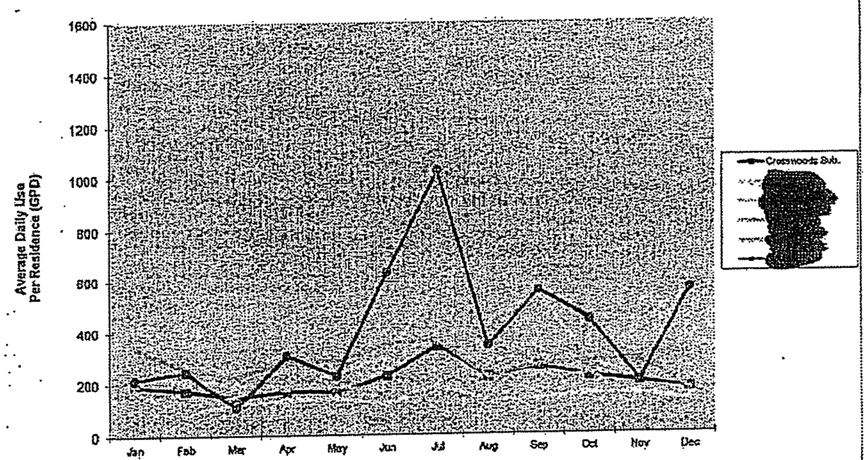


Table-19

Average Usage 2006
Northwest Service Area
Jessamine South Elkhorn Water District
Windhaven Subdivision

	# Households	Total Monthly Usage All Households	Average Daily Usage Per Household
Jan	51	253270	160
Feb	51	240540	158
Mar	51	210620	135
Apr	51	267330	175
May	51	290550	184
Jun	53	690600	434
Jul	53	1405810	856
Aug	55	1030340	604
Sep	58	1099070	632
Oct	59	1040550	568
Nov	58	516250	297
Dec	59	325040	178
Totals	650	7369970	

Average # Households 54 (650 ÷ 12)

Average Daily Usage Per Household 374 (7369970 ÷ 54 ÷ 365)

Table-25

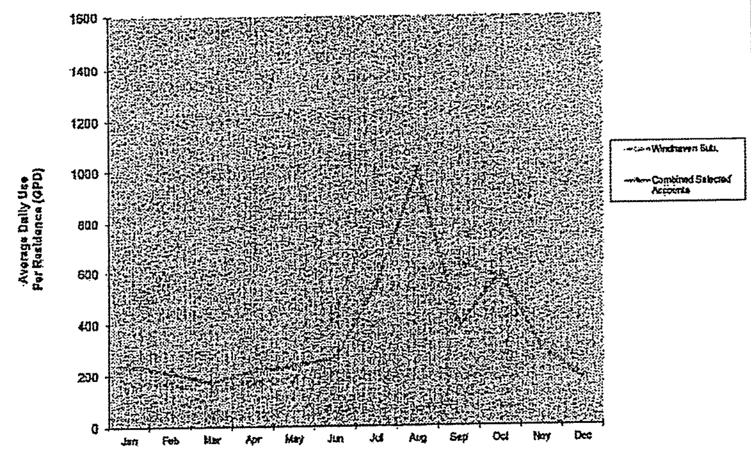
Average Usage 2006
Northwest Service Area
Jessamine South Elkhorn Water District
Selected Accounts

	[redacted]		[redacted]		[redacted]		[redacted]		[redacted]		All Selected	
	Total Monthly Usage	Average Daily Use Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Monthly Usage	Average Daily Usage	Total Usage Per Month	Daily Average
Jan	4580	148	8180	264	7560	244	9110	294	7360	[illegible]	36790	237
Feb	3640	130	6560	234	4560	163	8250	295	6160	[illegible]	29190	209
Mar	3470	112	5890	190	4400	142	7450	240	8720	[illegible]	26930	174
Apr	4130	138	6870	229	6730	224	9080	303	5830	[illegible]	32440	216
May	2860	92	6670	215	5410	175	6990	225	13870	[illegible]	35800	231
Jun	8400	280	9110	304	8300	277	7450	248	6050	[illegible]	39310	262
Jul	22480	725	10420	336	26990	873	13150	424	11980	[illegible]	85020	549
Aug	9670	312	107300	3461	12880	415	10230	330	15240	[illegible]	155320	1002
Sep	10610	354	8010	267	14900	497	11020	367	13110	[illegible]	57650	384
Oct	8570	276	9460	305	40630	1011	12950	418	19900	[illegible]	91510	590
Nov	5520	184	8000	267	13040	435	6900	230	11340	[illegible]	44800	299
Dec	3690	119	6370	205	5100	165	6910	223	7710	[illegible]	29780	192
Totals	87620		192040		150500		109490		124090		664540	

71

Graph - 34

Windhaven Subdivision
Average Daily Usage
With Combined Selected Accounts
2005



Graph - 35

Windhaven Subdivision
Average Daily Usage
With Selected Accounts
2005

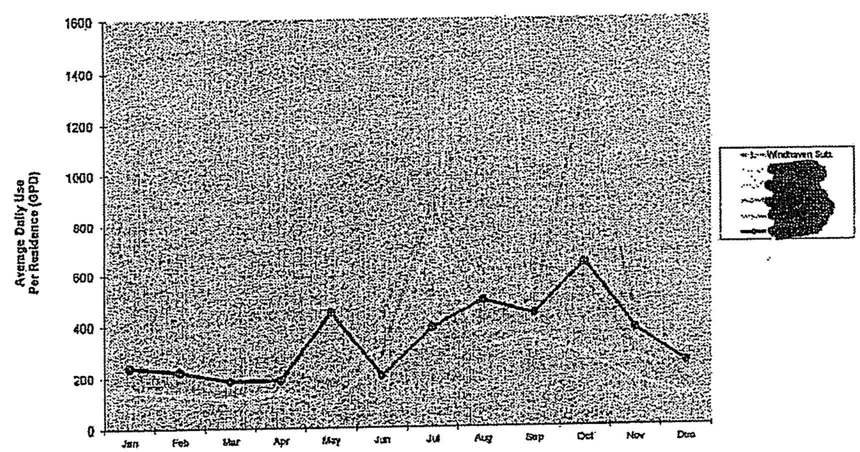


Table - 26

Average Usage 2005
Developed Subdivisions
Northwest Service Area
Jessamine South Elkhorn Water District

Subdivision	January			February			March			April			May			June		
	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)
Equestrian Estates	78	543530	225	78	347640	159	78	347390	144	80	409530	171	81	482680	192	88	1113950	422
Champions	65	497030	247	65	372170	204	65	338350	168	65	424800	218	65	529970	263	69	1078030	521
Cambridge	41	217580	171	40	181590	162	39	183010	151	39	216350	185	41	253610	200	47	799400	567
Barkley Woods	6	11200	60	8	12600	56	7	26120	120	8	25170	105	9	49820	179	11	222060	673
Crosswoods	66	386230	189	66	315310	171	66	292250	143	66	330050	167	66	333640	163	66	446900	226
Windhaven	51	253270	160	51	240540	168	51	210620	133	51	267330	175	51	290550	184	53	690600	434

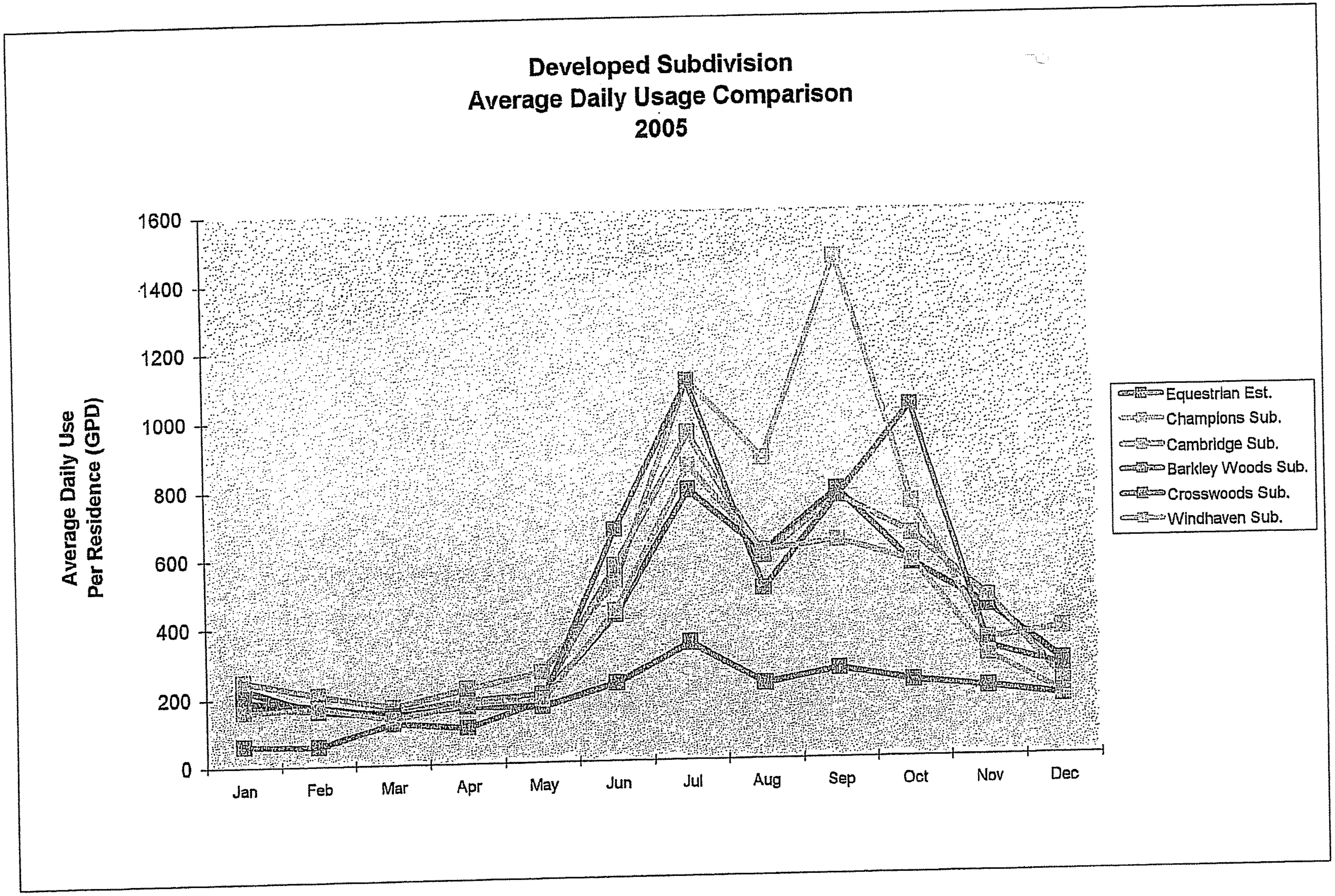
Subdivision	July			August			September			October			November			December		
	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)	Monthly # Res.	Total Monthly (GPM)	Average Daily (GPD)
Equestrian Estates	94	2285950	784	96	1783530	599	97	2271000	780	99	1722030	561	100	1306550	436	99	843340	275
Champions	74	2529090	1102	74	2010240	876	75	3280570	1458	74	1702200	742	73	742150	339	66	753080	368
Cambridge	57	1677960	950	58	1061120	590	64	1461980	761	67	1346880	648	68	941890	462	59	399000	218
Barkley Woods	19	648290	1101	20	306330	494	21	480270	762	23	729610	1023	24	229470	319	26	210160	261
Crosswoods	66	695110	340	66	449120	220	66	513420	259	66	453750	222	66	397670	201	66	356190	174
Windhaven	53	1405810	856	55	1030340	604	58	1099070	632	59	1040550	569	58	516250	297	59	325040	178

Subdivision	ANNUAL				Maximum			Minimum			(1) Average High Use		
	Average # Res.	Total Annual Use (gal)	Average Daily Use Per Res. (GPD)	Flow (2) (GPM)	Month	Average Daily Use Per Res. (GPD)	Flow (2) (GPM)	Month	Average Daily Use Per Res. (GPD)	Flow (2) (GPM)	Months of Use	Average Daily Use Per Res. (GPD)	Flow (2) (GPM)
Equestrian Estates	89	13457120	414	0.29	July	784	0.54	March	144	0.10	Jun/Nov	597	0.41
Champions	69	14257680	566	0.39	Sept.	1458	1.01	March	168	0.12	Jun/Nov	840	0.58
Cambridge	52	8740370	461	0.32	July	950	0.66	March	151	0.10	Jun/Nov	663	0.46
Barkley Woods	15	2951100	539	0.37	July	1101	0.76	Feb.	56	0.04	Jun/Nov	729	0.51
Crosswoods	66	4969640	206	0.14	July	340	0.24	March	143	0.10	Jun/Nov	244	0.17
Windhaven	54	7369970	374	0.26	July	856	0.59	March	133	0.09	Jun/Nov	565	0.39
	Average		427	0.30		915	0.63		133	0.09		606	0.42

(1) This is the average high use for the time period of June to November, determined by total of the average daily use for this period divided by six months.

(2) Flow is obtained by converting GPD to equivalent (GPM). Conversion is obtained by dividing GPD by 1440 (24Hrs x 60 min = 1440)

Graph - 36



Developed Subdivision
Average Daily Usage Comparison
2005
Average Daily Use
Per Residence (GPD)
1600
1400
1200
1000
800
600
400
200
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Equestrian Est.
Champions Sub.
Cambridge Sub.
Barkley Woods Sub.
Crosswoods Sub.
Windhaven Sub.

IX Irrigation System Effect

IX. IRRIGATION SYSTEM EFFECTS

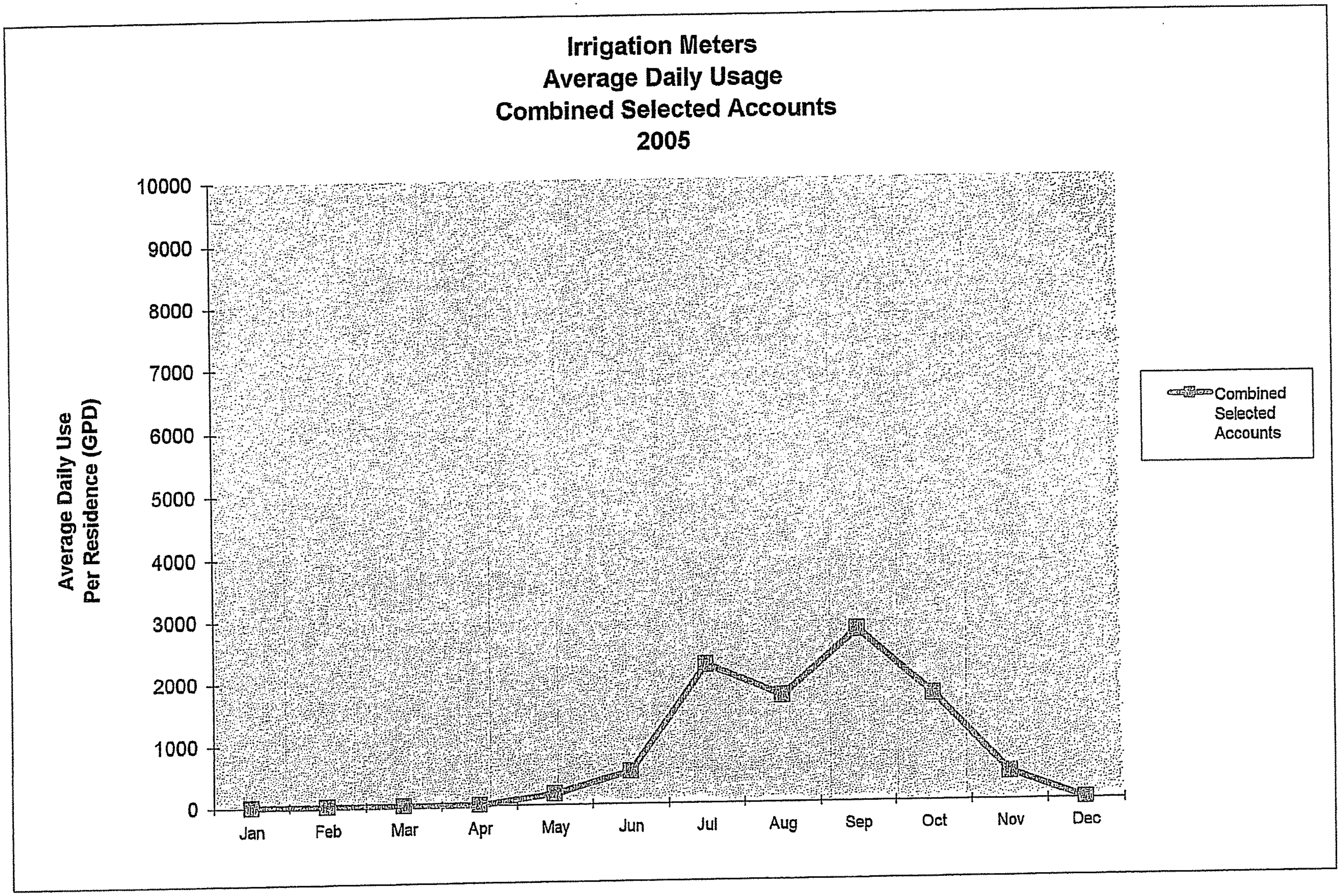
All of the previous water usage that we have dealt with have been restricted to domestic potable uses which are represented by usage within the subdivision through a standard 5/8" X 3/4" service. The District does have a tariff provisions that does allow for separate metering of irrigation systems. Typically, these systems are serviced by a 1" meter which is necessitated by the high demand use for the sizes of the irrigations systems which are installed. There are situation in the District where residential homes are serviced by a 1" meter and provide irrigation systems im conjunction with this potable service. However, there are some isolated instances where individual homes are serviced by a 1" meter without any provisions for landscape irrigation.

An investigation is included in this study regarding the irrigation demands on the system. It has become apparent that along with the upscale of the home construction that is occurring with these more recently developed subdivisions, there is an increasing demand for landscape irrigation. Typically, these demands are of such magnitude that they require separate services and metering. Consequently, it is believed that some accountability of this demand is warranted.

Table 28 is a listing of the eight selected accounts of irrigation use that are the basis of this study. As would be expected with an irrigation service, those accounts show zero usage predominately all months except from May to November. They vary in the number of month of zero usage, but most all are accomplished within that May-November time period, which one would expect to have irrigation demands. The usage records of these accounts are contained in Appendix E which is a copy of all 1" meters currently in operation within the District. As indicated in the footnoting of the appendix, there are a number of other strictly irrigation meters which are evidenced by the fact that there are several months of zero usage. However, there is also several 1" meters that are used in combination for potable supply as well as irrigation. These are indicated by the substantial usage that occurs in a predominately zero irrigation months of December to May. The fact that they are combination meters is supported by the extremely high usage that occur during the typically irrigation months of May to November.

Graph 37 is a large scale graphing of the combination of all these eight accounts which is represented by calculations and summations shown in Table 27. Graph 38 is a graphing of these each of these individual accounts and is shown in comparison to the combined account which is noted as 2005. Interestingly and as would be expected in averaging, there are a number of accounts that occur above, as well as below this combined 2005 graph line. Also, when viewed as to the maximum peak month during the irrigation system, several of these accounts have differing peak months and they are not all synonymous with each other. In addition, the beginning and ending of the irrigation system is different for various components. This can be explained in the fact that different landscape design require different amounts and time periods of irrigation resulting in a disparity between the demands that are present. However, what is indisputable and evident is the fact that irrigation demands are significantly higher than potable demands. This is represented by the graphing of the average daily use which extends in the peak month from a period of approximately 900 GPD to in some cases a period that exceeds 8,000 GPD. We are talking in terms of a daily usage and in some cases, exceeds most customers monthly usage. It is quite evident that the style and quality home that is being built in this service area places and extremely high daily demand on water when normal potable demands are coupled with the very high seasonal demands.

Graph 37


Irrigation Meters
Average Daily Usage
Combined Selected Accounts
2005
Average Daily Use
Per Residence (GPD)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Combined Selected Accounts

X. PROJECT SIZING AND COST

Presently, since the end of 2005 there have been a number of developments which are in varying stages of approval, from approved preliminary plat to zone change application. Those developments, presently of record and proceeding, are:

Subdivision Name	Number of Lots
Harrods Ridge	42
Keene Manor	42
Forest Hills	38
The Oaks	62
Barkley Woods - 7	45
Renaissance Run	24
Cambridge North	42
Clays Crossing	100
Total	395

Needless to say, not all of these lots will come online or will be available or built on within the coming year. However, this information is presented to conclusively demonstrate that the Northwest Service Area of the Jessamine South Elkhorn Water District is still viable and under high pressure growth. Consequently, based on the prior discussion of analysis of recent trends in growth, it is reasonable to assume that the service demands will meet or exceed the projected 60 meters per year. Also, it is certainly reasonable to state that this rate of growth would continue throughout the expected funding life cycle of the storage required for this increased demand of use, i.e.; 40-years.

The projected storage demand of peak months being 400 per meter, this report would recommend that a 1.0 million-gallon storage facility be constructed to serve the immediate and future needs of the District. With a 1.0 million gallon capacity and a 400 gallon per household demand, this would equate to potential storage service to 2,500 households. Based on the accepted assimilation rate of 60 meters per year, this would then equate to a usable life of the facility for approximately 40 years.

Contained in Appendix G is a copy of an application for Federal Assistance and also additional supplied information in support of this application which has been forwarded to the United States Department of Agriculture, Rural Utilities Development with a request for funding. This application anticipates construction of a 1.0 million gallon elevated storage tank and associated offsite piping that will be necessary to bring this storage facility within hydraulic grid of the District and to provide reinforcement of existing and future hydraulic demands within the Northwest Service Area.

At this point it should be noted that discussion regarding storage requirements and funding have been relegated only to the Northwest Service Area. As was discussed earlier in this study, the Southeast Service Area has only recently been brought online and was constructed with an available 200,000 gallon standpipe storage. Based on the existing customer base as of the end of 2005 being 380 meters and also as exemplified in the graphing of the water usage, wherein the customers in this area more closely associate with the typical 300 GPD average, this available storage would equate to availability of approximately 667 households. The existing 380 households is approximately one-half of that availability. Even anticipating the increase per daily average demand of each household even closely approaching 400 GPD, this would still equate to the availability to 500 households. Coupling this with the realization that growth in this portion of the County is going to be extremely slow, and the existing storage capacity representing an availability of 150 - 300 additional homes, it is not anticipated that any additional storage would be needed in this area for the next 10-20 years. Therefore, it is not considered as to any additional storage or funding at this time.

XI Project Funding
and Repayment

SECTION - XI PROJECT FUNDING AND REPAYMENT

Sizing of storage facilities is a subjective procedure. The primary purpose of in-system storage is to attenuate high demand flows within the system such that high peak periods do not stress or overexert the system. Also, reserve for fire protection and interruptions are factors to be considered.

Further, to exacerbate the decision process is the factor that per gallon cost of construction is not linear. The major portion of cost is contained in appurtenances, site, access, foundation and control. Essentially, this cost is the same for one gallon or one million gallons. This is to say that a 500,000 tank cost only about one-quarter more to double the capacity to 1,000,000, not double the cost. Therefore, it is the recommendation of this study that a one million gallon tank be constructed in the Northwest Service Area.

Conversely, it has been shown that the Northwest Service Area is increasing at a steady and definite pace, and that additional storage is demanded for the systems, presently. Based on the analysis of the needs of the system in the area and a recommendation that a 1.0 million gallon elevated storage tank be constructed at a project cost at $2,150,000, the question then becomes how to fund and repay for this project. It is the recommendation of this study that this project be funded by a 4.5% loan from the USDA Rural Development and that the repayment of this loan be made under adoption of a **SYSTEM DEVELOPMENT CHARGE** for those projected users that will require the construction of this additional storage.

Appendix H is an amortization schedule for a loan of $2,150,000, repaid over a period of 40 years and assess at an interest rate of 4.5%. Based on the repayment schedule of this loan, it will require an annual servicing of $116,837.77. The total repayment cost for this loan is $4,673,510.27, after 40 years. Based on a design parameter of 400 GPC, this debt allocation will be based on a total base of 2,300 customers (1,000,000 gal ÷ 400 GPC) and equates to $1,869.40 of direct construction cost. Including a reasonable administrative cost of $30.60, gives a total cost of $2,000.00. Therefore, it is recommendation of this report that a **SYSTEM DEVELOPMENT CHARGE** of $2,000/meter be adopted.

Since the storage capacity of the system is currently near or at capacity, it would also be recommended that this system charge go into effect immediately upon adoption and that this charge be applied to any application for metered service. This should be based on a standard 5/8" X 3/4" meter and that larger meters be charged on a subsequently higher rate, insofaras, they would be demanding greater storage. Based on the demonstration of equivalent usage between the standard 5/8" X 3/4" meter which equates to 500 GPD and the anticipated average of the 1" meter which is closer to the range of 1,000 GPD, this report would recommend that the systems development charge for the 1" meter be pegged at twice the standard 5/8" X 3/4" system development charge.

Q:\ProjectDir\Jscwd\WO3569\SystemStorageCIPDev'tCharge.wpd

September 3, 2003

The Board of Commissioners of the Jessamine South Elkhorn Water District met on September 3, 2003, with the following Commissioners present: Jerry Haws, George Dale Robinson, Leon Taylor, John Blackford, and Kenneth Noland. John Horne, Christopher Horne, Bruce Smith, Steve Stephenson, Michael Stephenson, Tom Smith, and Diana Clark were also present. Mr. Robinson had to leave the meeting early.

There was a discussion on the automatic payment plan; however, the item was tabled until October so Mr. Smith could check into the liability of the District and whether the District had insurance to cover the liability.

Adrian and Brian Mason addressed the Board with proposals for the overseeing of the operations and maintenance of the Southland Christian Church (SCC) **wastewater pump station**. The two proposals were discussed in length, but no action was taken until the District meets with all parties concerned.

A motion to approve the August bills was made by Mr. Robinson, seconded by Mr. Blackford - approved.

Mr. Horne reported to the Board on the meetings concerning the relocation and transfer of the SCC **wastewater system**. Mr. Horne recommended and the Board agreed the line should be relocated, inspected, and put into service, as well as, the telemetry installed before the District accepts the ownership.

There was a discussion on accepting the idea of the Mason's proposal verses hiring an additional water/wastewater operator.

There was a brief discussion on the revision of the Extension Procedure Packet and a motion to accept the changes was made by Mr. Taylor, seconded by Mr. Blackford - approved.

Mr. Smith passed out a draft copy of the county ordinance on the sewer lines for review and input from the Board.

Mr. Horne reported they were looking at several **tank sites**; however, no commitments or options have been obtained. Mr. Horne stated a 500,000 gallon tank could be placed on the existing tank site, but he was not for sure a million gallon tank would fit. He will have more information at the October meeting.

A motion to accept the minutes of the August meeting was made by Mr. Blackford, seconded by Mr. Taylor - approved.

There was a brief discussion on the request from **Ichthus** to be released to the City of Wilmore. Mr. Horne's recommendation is to deny deletion of the territory.

FOREST HILLS
EXHIBIT 4

Blumberg No. 5119 EXHIBIT IX-4

Jessamine-South Elkhorn Water District

Information Request No. 33: Please describe in detail the ratemaking treatment the District proposes to recover funds to repay the loan that is described in the Application in this proceeding.

Answer: **None. The District will make its final payment on Kentucky Infrastructure Authority Fund C91-01 in June 2013. The amount of that loan is $1,924,874 and the annual debt service on that loan for 2012 is $126,981. This loan was in part to fund construction of the 500,000 gallon elevated storage tank at Parks Lane. The debt service schedule included in Exhibit E of the application of the District for a CPCN to construct the proposed tank (case No. 2012-00470), shows the proposed annual debt service to vary from a minimum of $72,210 to a maximum of $81,255. The District proposes to service the annual debt for the proposed tank from the funds made available from the retirement of the debt for the KIA Fund C91-01).**

[Witness: L. Nicholas Strong]

FOREST HILLS
EXHIBIT 5

Blumberg No. 5119
EXHIBIT
IX-5

Recommended Standards For Water Works

2003 Edition

Policies for the Review and Approval
of Plans and Specifications for Public Water Supplies

A Report of the Water Supply Committee of the
Great Lakes--Upper Mississippi River Board
of State and Provincial Public Health and Environmental Managers

See Preface for title page, copyright, table of contents, foreword, policy statements, and interim standards.

EXHIBIT
IX-6

FOREST HILLS
EXHIBIT 6

FINISHED WATER STORAGE

7.0 GENERAL

The materials and designs used for finished water storage structures shall provide stability and durability as well as protect the quality of the stored water. Steel structures shall follow the current AWWA standards concerning steel tanks, standpipes, reservoirs, and elevated tanks wherever they are applicable. Other materials of construction are acceptable when properly designed to meet the requirements of Part 7.

7.0.1 Sizing

Storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands, and where fire protection is provided, fire flow demands.

a. Fire flow requirements established by the appropriate state Insurance Services Office should be satisfied where fire protection is provided.

b. The minimum storage capacity (or equivalent capacity) for systems not providing fire protection shall be equal to the average daily consumption. This requirement may be reduced when the source and treatment facilities have sufficient capacity with standby power to supplement peak demands of the system.

c. Excessive storage capacity should be avoided to prevent potential water quality deterioration problems.

7.0.2 Location of reservoirs

a. Consideration should be given to maintaining water quality when locating water storage facilities.

b. The bottom of ground level reservoirs and standpipes should be placed at the normal ground surface and shall be above the 100 Year Flood or the highest flood of record.

c. If the bottom elevation of a storage reservoir must be below normal ground surface, it shall be placed above the groundwater table. At least 50 per cent of the water depth should be above grade. Sewers, drains, standing water, and similar sources of possible contamination must be kept at least 50 feet from the reservoir. Gravity sewers constructed of water main quality pipe, pressure tested in place without leakage, may be used at distances greater than 20 feet but less than 50 feet.

d. The top of a partially buried storage structure shall not be less than two feet above normal ground surface. Clearwells constructed under filters may be excepted from this requirement when the design provides adequate protection from contamination.

7.0.3 Protection from contamination

All finished water storage structures shall have suitable watertight roofs which exclude birds, animals, insects, and excessive dust. The installation of appurtenances, such as antenna, shall be done in a manner that ensures no damage to the tank, coatings or water quality, or corrects any damage that occurred.

7.0.4 Protection from trespassers

Fencing, locks on access manholes, and other necessary precautions shall be provided to prevent trespassing, vandalism, and sabotage.

7.0.5 Drains

No drain on a water storage structure may have a direct connection to a sewer or storm drain. The design shall allow draining the storage facility for cleaning or maintenance without causing loss of pressure in the distribution system.

7.0.6 Stored Water Turnover

The system should be designed to facilitate turnover of water in the reservoir. Consideration should be given to separate inlet and outlet pipes, baffle walls or other acceptable means to avoid stagnation.

7.0.7 Overflow

All water storage structures shall be provided with an overflow which is brought down to an elevation between 12 and 24 inches above the ground surface, and discharges over a drainage inlet structure or a splash plate. No overflow may be connected directly to a sewer or a storm drain. All overflow pipes shall be located so that any discharge is visible.

a. When an internal overflow pipe is used on elevated tanks, it should be located in the access tube. For vertical drops on other types of storage facilities, the overflow pipe should be located on the outside of the structure.

b. The overflow for a ground-level storage reservoir shall open downward and be screened with twenty-four mesh non-corrodible screen. The screen shall be installed within the overflow pipe at a location least susceptible to damage by vandalism. If a flapper valve is used, a screen shall be provided inside the valve.

c. The overflow for an elevated tank shall open downward and be screened with a four mesh, non-corrodible screen. The screen shall be installed within the overflow pipe at a location least susceptible to damage by vandalism. If a flapper valve is used, a screen shall be provided inside the valve.

d. The overflow pipe shall be of sufficient diameter to permit waste of water in excess of the filling rate.

7.0.8 Access

Finished water storage structures shall be designed with reasonably convenient access to the interior for cleaning and maintenance. At least two (2) manholes shall be provided above the waterline at each water compartment where space permits.

7.0.8.1 Elevated Storage Structures

a. At least one of the access manholes shall be framed at least four inches above the surface of the roof at the opening. They shall be fitted with a solid water tight cover which overlaps the framed opening and extends down around the frame at least two inches, shall be hinged on one side, and shall have a locking device.

b. All other manholes or access ways shall be bolted and gasketed according to the requirements of the reviewing authority, or shall meet the requirements of (a).

7.0.8.2 Ground Level Structures

a. Each manhole shall be elevated at least 24 inches above the top of the tank or covering sod, whichever is higher.

b. Each manhole shall be fitted with a solid water tight cover which overlaps a framed opening and extends down around the frame at least two inches. The frame shall be at least four inches high. Each cover shall be hinged on one side, and shall have a locking device.

7.0.9 Vents

Finished water storage structures shall be vented. The overflow pipe shall not be considered a vent. Open construction between the sidewall and roof is not permissible. Vents

a. shall prevent the entrance of surface water and rainwater,

b. shall exclude birds and animals,

c. should exclude insects and dust, as much as this function can be made compatible with effective venting,

d. shall, on ground-level structures, open downward with the opening at least 24 inches above the roof or sod and covered with twenty-four mesh non-corrodible screen. The screen shall be installed within the pipe at a location least susceptible to vandalism.

e. shall, on elevated tanks and standpipes, open downward, and be fitted with either four mesh non-corrodible screen, or with finer mesh non-corrodible screen in combination with an automatically resetting pressure-vacuum relief mechanism, as required by the reviewing authority.

7.0.10 Roof and sidewall

The roof and sidewalls of all water storage structures must be watertight with no openings except properly constructed vents, manholes, overflows, risers, drains, pump mountings, control ports, or piping for inflow and outflow. Particular attention shall be given to the sealing of roof structures which are not integral to the tank body.

a. Any pipes running through the roof or sidewall of a metal storage structure must be welded, or properly gasketed. In concrete tanks, these pipes shall be connected to standard wall castings which were poured in place during the forming of the concrete. These wall castings should have seepage rings imbedded in the concrete.

b. Openings in the roof of a storage structure designed to accommodate control apparatus or pump columns, shall be curbed and sleeved with proper additional shielding to prevent contamination from surface or floor drainage.

c. Valves and controls should be located outside the storage structure so that the valve stems and similar projections will not pass through the roof or top of the reservoir.

d. The roof of the storage structure shall be well drained. Downspout pipes shall not enter or pass through the reservoir. Parapets, or similar construction which would tend to hold water and snow on the roof, will not be approved unless adequate waterproofing and drainage are provided.

e. The roof of concrete reservoirs with earthen cover shall be sloped to facilitate drainage. Consideration should be given to installation of an impermeable membrane roof covering.

f. Reservoirs with pre-cast concrete roof structures must be made watertight with the use of a waterproof membrane or similar product.

7.0.11 Construction Materials

The material used in construction of reservoirs shall be acceptable to the reviewing authority. Porous material, including wood and concrete block, are not suitable for potable water contact applications.

7.0.12 Safety

Safety must be considered in the design of the storage structure. The design shall conform to pertinent laws and regulations of the area where the water storage structure is constructed.

a. Ladders, ladder guards, balcony railings, and safely located entrance hatches shall be provided where applicable.

b. Elevated tanks with riser pipes over eight inches in diameter shall have protective bars over the riser openings inside the tank.

c. Railings or handholds shall be provided on elevated tanks where persons must transfer from the access tube to the water compartment.

d. Confined space entry requirements shall be considered.

7.0.13 Freezing

Finished water storage structures and their appurtenances, especially the riser pipes, overflows, and vents, shall be designed to prevent freezing which will interfere with proper functioning. Equipment used for freeze protection that will come into contact with the potable water shall meet ANSI/NSF Standard 61 or be approved by the reviewing authority. If a water circulation system is used, it is recommended that the circulation pipe be located separately from the riser pipe.

7.0.14 Internal catwalk

Every catwalk over finished water in a storage structure shall have a solid floor with sealed raised edges, designed to prevent contamination from shoe scrapings and dirt.

7.0.15 Silt stop

The discharge pipes from water storage structures shall be located in a manner that will prevent the flow of sediment into the distribution system. Removable silt stops should be provided.

7.0.16 Grading

The area surrounding a ground-level structure shall be graded in a manner that will prevent surface water from standing within 50 feet of it.

7.0.17 Painting and/or cathodic protection

Proper protection shall be given to metal surfaces by paints or other protective coatings, by cathodic protective devices, or by both.

a. Paint systems shall meet ANSI/NSF standard 61 and be acceptable to the reviewing authority. Interior paint must be applied, cured, and used in a manner consistent with the ANSI/NSF approval. After curing, the coating shall not transfer any substance to the water which will be toxic or cause taste or odor problems. Prior to placing in service, an analysis for volatile organic compounds is advisable to establish that the coating is properly cured. Consideration should be given to 100 % solids coatings.

b. Wax coatings for the tank interior shall not be used on new tanks. Recoating with a wax system is strongly discouraged. Old wax coating must be completely removed before using another tank coating.

c. Cathodic protection should be designed and installed by competent technical personnel, and a maintenance contract should be provided.

7.0.18 Disinfection

a.

Finished water storage structures shall be disinfected in accordance with AWWA Standard C652. Two or more successive sets of samples, taken at 24-hour intervals, shall indicate microbiologically satisfactory water before the facility is placed into operation.

b. Disposal of heavily chlorinated water from the tank disinfection process shall be in accordance with the requirements of the state regulatory agency.

c. The disinfection procedure specified in AWWA Standard C652 chlorination method 3, section 4.3 which allows use of the highly chlorinated water held in the storage tank for disinfection purposes, is not recommended. The chlorinated water may contain various disinfection by-products which should be kept out of the distribution system.

If this procedure is used, it is recommended that the initial heavily chlorinated water be properly disposed.

7.0.19 Provisions for sampling

Smooth-nosed sampling tap(s) shall be provided to facilitate collection of water samples for both bacteriological and chemical analyses. The sample tap(s) shall be easily accessible.

7.1 TREATMENT PLANT STORAGE

The applicable design standards of Section 7.0 shall be followed for plant storage.

7.1.1 Filter washwater tanks

Filter washwater tanks shall be sized, in conjunction with available pump units and finished water storage, to provide the backwash water required by Section 4.2.1.11. Consideration must be given to the backwashing of several filters in rapid succession.

7.1.2 Clearwell

Clearwell storage should be sized, in conjunction with distribution system storage, to relieve the filters from having to follow fluctuations in water use.

a. When finished water storage is used to provide disinfectant contact time(see Section 4.3.2) special attention must be given to tank size and baffling. (See Section 7.1.2.b below.)

b. To ensure adequate disinfectant contact time, sizing of the clearwell should include extra volume to accommodate depletion of storage during the nighttime for intermittently operated filtration plants with automatic high service pumping from the clearwell during non-treatment hours.

c. An overflow and vent shall be provided.

d. A minimum of two clearwell compartments shall be provided.

7.1.3 Adjacent storage

Finished or treated water must not be stored or conveyed in a compartment adjacent to untreated or partially treated water when the two compartments are separated by a single wall, unless approved by the reviewing authority.

7.1.4 Other treatment plant storage tanks

Unless otherwise allowed by the reviewing authority, other treatment plant storage tanks/basins such as detention basins, backwash reclaim tanks, receiving basins and pump wet-wells for finished water shall be designed as finished water storage structures .

7.2 HYDROPNEUMATIC TANK SYSTEMS

Hydropneumatic (pressure) tanks, when provided as the only water storage are acceptable only in very small water systems. Systems serving more than 150 living units should have ground or elevated storage designed in accordance with Section 7.1 or 7.3. Hydropneumatic tank storage is not to be permitted for fire protection purposes. Pressure tanks shall meet ASME code requirements or an equivalent requirement of state and local laws and regulations for the construction and installation of unfired pressure vessels.

7.2.1 Location

The tank shall be located above normal ground surface and be completely housed.

7.2.2 System sizing

a. The capacity of the wells and pumps in a hydropneumatic system should be at least ten times the average daily consumption rate.

b. The gross volume of the hydropneumatic tank, in gallons, should be at least ten times the capacity of the largest pump, rated in gallons per minute. For example, a 250 gpm pump should have a 2,500 gallon pressure tank, unless other measures (e.g., variable speed drives in conjunction with the pump motors) are provided to meet the maximum demand.

c. Sizing of hydropneumatic storage tanks must consider the need for disinfectant contact time.

7.2.3 Piping

The hydropneumatic tank(s) shall have bypass piping to permit operation of the system while the tank is being repaired or painted.

7.2.4 Appurtenances

Each tank shall have an access manhole, a drain, and control equipment consisting of a pressure gauge, water sight glass, automatic or manual air blow-off, means for adding air, and pressure operated start-stop controls for the pumps. Where practical the access manhole should be 24 inches in diameter.

7.3 DISTRIBUTION SYSTEM STORAGE

The applicable design standards of Section 7.0 shall be followed for distribution system storage.

7.3.1 Pressures

The maximum variation between high and low levels in storage structures providing pressure to a distribution system should not exceed 30 feet. The minimum working pressure in the distribution system should be 35 psi (240 kPa) and the normal working pressure should be approximately 60 to 80 psi (410 - 550 kPa). When static pressures exceed 100 psi (690 kPa), pressure reducing devices should be provided on mains in the distribution system.

7.3.2 Drainage

Finished water storage structures which provide pressure directly to the distribution system shall be designed so they can be isolated from the distribution system and drained for cleaning or maintenance without causing a loss of pressure in the distribution system. The storage structure drain shall discharge to the ground surface with no direct connection to a sewer or storm drain.

7.3.3 Level controls

Adequate controls shall be provided to maintain levels in distribution system storage structures. Level indicating devices should be provided at a central location.

a. Pumps should be controlled from tank levels with the signal transmitted by telemetering equipment when any appreciable head loss occurs in the distribution system between the source and the storage structure.

b. Altitude valves or equivalent controls may be required for a second and subsequent structures on the system.

c. Overflow and low-level warnings or alarms should be located where they will be under responsible surveillance 24 hours a day.

Jessamine-South Elkhorn Water District

Information Request No. 3: Please identify, describe in detail and provide all facts and documents regarding any cost analysis performed by or on behalf of the District for any alternative site considered for the construction of the water tank proposed in this proceeding. Each analysis should include all cost estimates, identify the sources of the cost information, describe all assumptions used to develop the analysis and include any supporting documentation.

Answer: **None. It was not, nor has ever been a question of site comparison, but the problem of finding a land owner willing to sell propery for a tank site, as is the current situation. However, see cost analysis performed to evaluate Forest Hills' residents suggested move of the proposed site to the McMillen Farm to the east which occurred during discussions with said group led by William Bates attached at JSEWD Answer to Forest Hills' Request No. 7.**

[Witness: John G. Horne]

FOREST HILLS
EXHIBIT 7

EXHIBIT
16
Blumberg No. 5119

Jessamine-South Elkhorn Water District

Information Request No. 4: Please provide and explain the logic the District used in making the selection of the site for the water tank proposed in this proceeding.

Answer: **Topo maps were examined to find locations with sufficient elevation to effectively construct an elevated storage tank, property owners were identifed for these locations and the owners were contacted to ascertain interest. Sue Switzer was the only owner willing to discuss a sale of a parcel to JSEWD and a price was agreed and paid.**

[Witness: John G. Horne]

Jessamine-South Elkhorn Water District

Information Request No. 5: Please provide and explain the District's engineering criteria in making the selection of the site for the water tank proposed in this proceeding.

Answer: **Sufficiency of site for intended use; availability for purchase by JSEWD; and cost of site.**

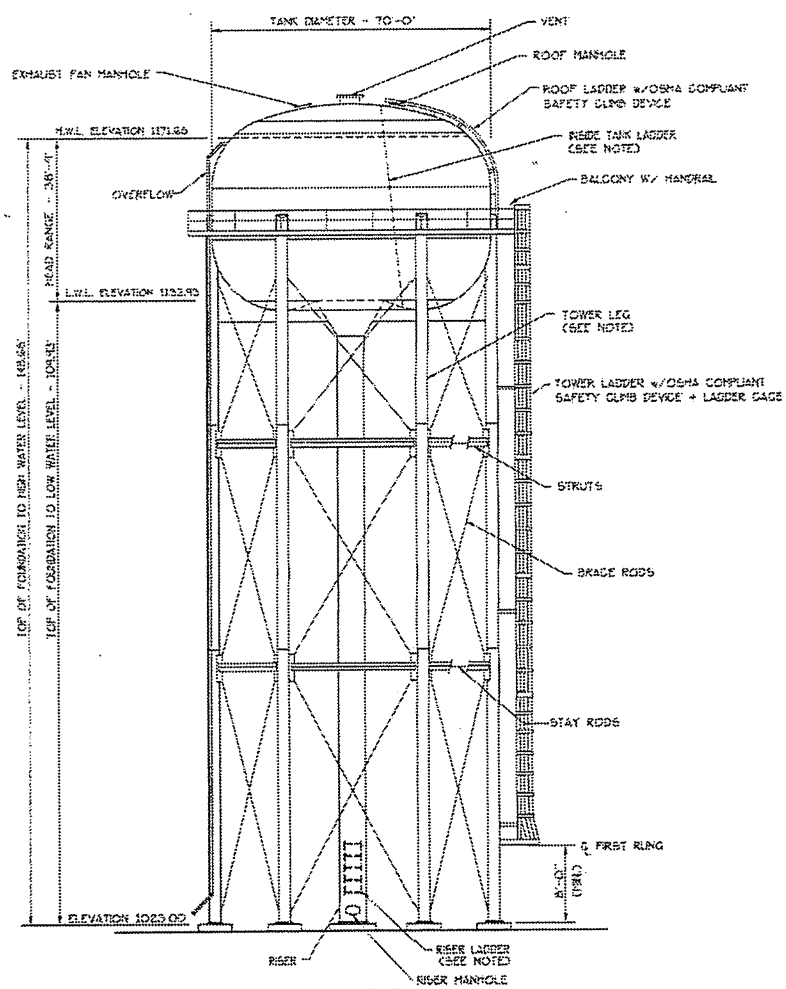
[Witness: John G. Horne]

Jessamine-South Elkhorn Water District

Information Request No. 5: Refer to JSEWD's response to Information Request No. 5 of the Intervenors' First Set of Requests for Information. What are JSEWD's criteria for "[s]ufficiency of site for intended use"?

Answer: JSEWD's criteria for the subject phrase can be found in *Webster's Seventh Collegiate Dictionary* in the definition for "sufficient": "enough to meet the needs of a situation or a proposed end".

[Witness: John G. Horne]



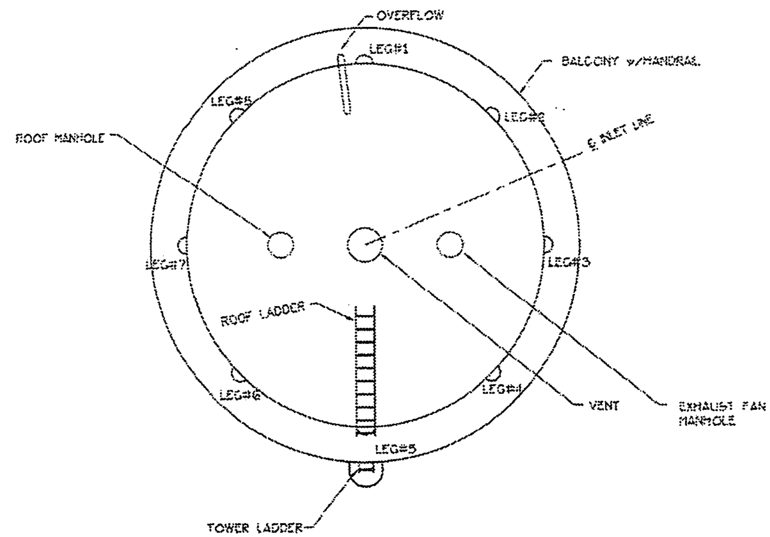
ELEVATION VIEW
NOT TO SCALE

DESIGN:
TANK AND TOWER SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH AWWA D100-96 AND PROJECT SPECIFICATIONS. A PROFESSIONAL ENGINEER SHALL DESIGN TANK AND FOUNDATION WITH STAMPED DRAWINGS SUBMITTED ACCORDINGLY.

WIND LOAD, SNOW LOAD AND SEISMIC ZONE SHALL BE DETERMINED IN ACCORDANCE WITH AWWA D100-05 GUIDELINES AND SUBMITTED TO HORNE ENGINEERING FOR REVIEW.

MATERIALS:
STEEL PLATE: ASTM A283 GR. C / A36
STRUCTURAL STEEL SHAPES: ASTM A36
BRACE RODS AND STAY RODS: ASTM A36
LADDER RUNGS: ASTM A706

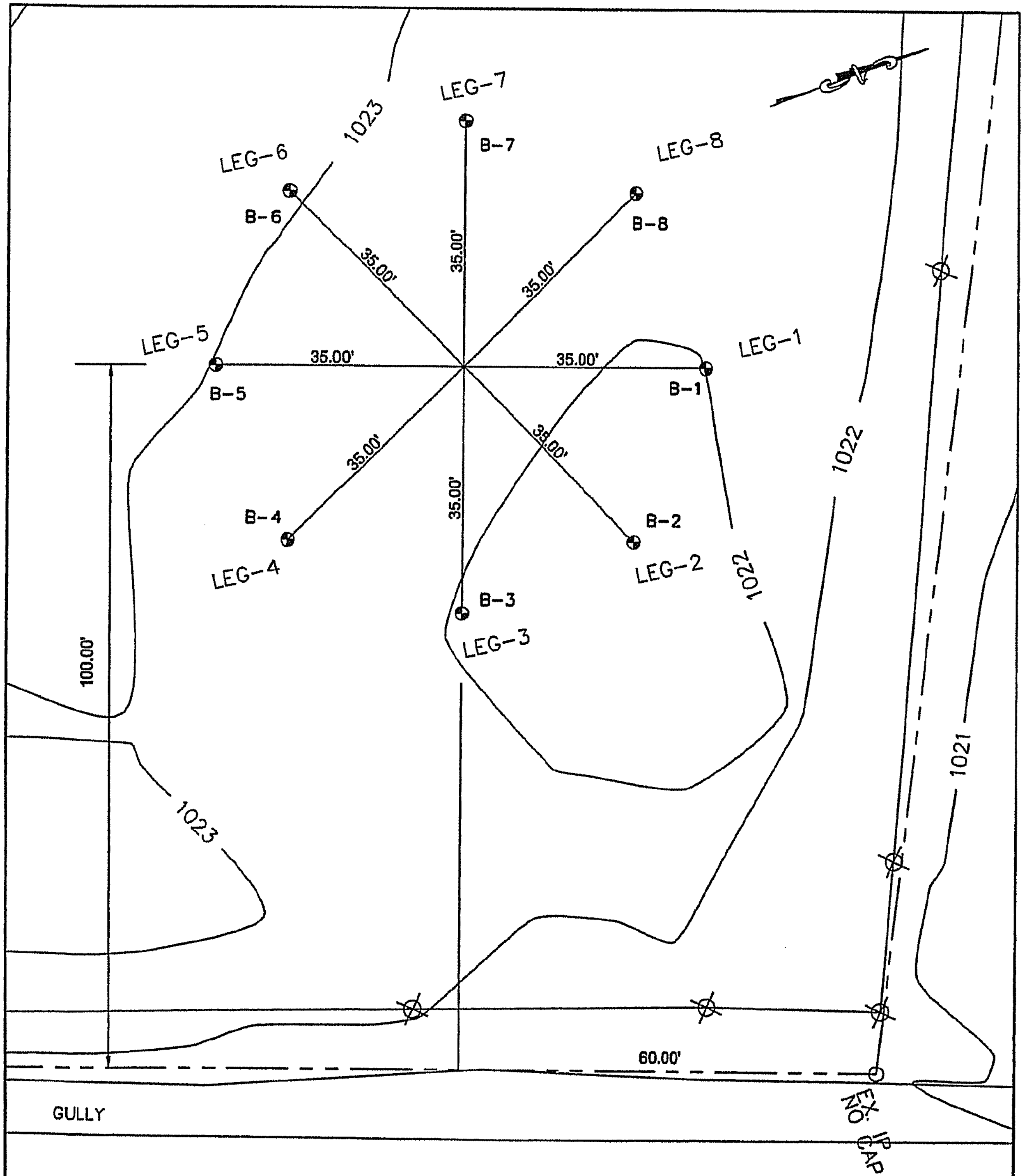
GENERAL:
- ACCESSORIES SHOWN ON ELEVATION DRAWING ARE ROTATED FOR CLARITY.
- ALL HANDRAILS, PLATFORM LANDINGS, WALKWAYS, LADDERS, AND SAFETY CLIMB DEVICES SHALL CONFORM WITH CURRENT OSHA STANDARDS.
- SEE PROJECT SPECIFICATIONS FOR SHOP AND FIELD PAINT REQUIREMENTS.
- STERILIZE TANK IN ACCORDANCE WITH AWWA C652-92 AND PROJECT SPECIFICATIONS.
- FOR TANKS LOCATED IN REGIONS WHERE FREEZING CONDITIONS MAY OCCUR CONSIDERATION SHALL BE GIVEN TO OMISSION OF INSIDE TANK LADDER.
- NUMBER OF TOWER LEGS PER MANUFACTURER'S STANDARD DESIGN.



NO.	REVISIONS	BY	DATE	DES / DRN / CHK / APPD	DATE	SCALE				SHEET
				DES JCH, DRN WHH, CHK JCH, APPD	NOVEMBER 2010	N.T.S.	CATNIP HILL PIKE 1.0MG ELEVATED STORAGE TANK JESSAMINE SOUTH ELKHORN WATER DISTRICT 802 SOUTH MAIN STREET, NICHOLASVILLE, KY. 40356	HORNE ENGINEERING, INC. ENGINEERS - PLANNERS - LAND SURVEYORS	ELEVATION VIEW	3 OF 6

FOREST HILLS
EXHIBIT 8

Blumberg No. 5119
EXHIBIT
IX-7



LEGEND:
SOIL BORING LOCATION

GRAPHIC SCALE

0 20 40

SOURCE:

Soil Boring Location Plan adapted from drawing provided by Horne Engineering, Inc.

FIGURE 2

BORING LOCATION PLAN

1,000,000 GALLON WATER TANK – SWITZER PROPERTY

LOCATION: JESSAMINE CO., KENTUCKY | QORE PROJECT NUMBER: 24302766

JESSAMINE SOUTH ELKHORN WATER DISTRICT

SCALE: As Shown
DATE: 2-27-04
DRAWN BY: DBT
CHECKED BY: JY

QORE PROPERTY SCIENCES

FOREST HILLS
EXHIBIT 9

RONALD C. SWITZER
811 CORPORATE DRIVE · SUITE 303
LEXINGTON, KENTUCKY 40503

PHONE: 859-223-0353

EXHIBIT
Blumberg No. 5119
IX-8

DATE: December 4, 2003

TO: Sue Switzer

C/C: John Horne

FROM: Ron Switzer

Sue, there are points you should consider regarding the sale of property to the water district.

1. I thought tank was to be located at corner next to Catnip Hill Road. Since they want property on northeast corner then they are utilizing another acre or so with easement plus the fact that this will be a road that will distract from development of lots that run parallel to easement.

2. There needs to be more planting materials around tank.

3. There needs to be language to maintain tank and fencing both around proposed tank and existing tank.

4. There needs to be language regarding the maintenance of grass in easement area.

5. There needs to be provision for no cell phone or other attachments to tower.

6. Green slats need to be inserted in the fencing around the tower.

7. Will there be a fire hydrant on site?

8. You need to either get more compensation or possibly credit on future water bills in exchange for easement.

If the above cannot be satisfactorily concluded, then I advise you forget the sale due to damage to any proposed future development.

Jessamine-South Elkhorn Water District

Information Request No. 1: Provide hydraulic analyses, supported by computations and acatual field measurements, of typical operational sequences of Jessamine-South Elkhorn District's distribution system. These hydraulic analyses should demonstate the operation of all pump stations and the "empty-fill" cycle of all water storage tanks. Computations are to be documented by a labeled schematic map of the system that shows pipeline sizes, lengths, connections, pumps, water storaage tanks, wells, and sea level elevations of key points, as well as all locations of actual customer demands. Flows used in the analyses shall be identifed as to whether they are based on average instantaneous flows, peak instantaneous flows, or any combination of variation thereof. Theflows used in he analyses shall be documented by actual field measurements and customer use records. Justify fully any assumptions used in the analyses.

Answer: **Digital version of this information filed with this response along with separate Exhibit "1".**

[Witness: L. Christopher Horne}

FOREST HILLS
EXHIBIT 10

EXHIBIT
1X - 9

Telemetry Controls

The telemetry control levels have been adjusted. After all of these modifications were made to the model, running the analysis revealed that 100% of the proposed tank capacity would not be turned over in a 72-hour period. Therefore, the model was run by dropping the pump off - pump on telemetry setting on the new tank from 1170 down to 1154, thereby reducing the volume that would be stored in the tank to 604,515gallon.

The telemetry in the older 500,000 gallon tank was left untouched, which would allow additional volume in that tank to be used, since the water level in it rises and falls faster than the larger proposed tank. When these new levels were set and the analysis was run, the volume drained from the new tank is equal to 676,481 gallons which exceeds the working capacity of the tank, thereby showing that the turn over is achievable. A graph of the hydraulic grade line for all three tanks over the 72-hour period is included, herein with an explanation of how the volumes were calculated.

The conservative values that were in the model previously submitted to the Kentucky Division of Water were there to ensure that customers can be served water adequately without capacity issues. However, when it comes to the analysis for a proposed tank, those types of conservative values are not helpful. Therefore, the changes were made to more accurately reflect current conditions.

Following the same format as the original report, the full of all 72-hours of analysis is not included in this report. Rather, there are selected portions of the results that were printed and are included in this report. The data summary is given in full, followed by the pump report and then the tank report, as well as a maximum/minimum report. The maximum/minimum report includes the maximum/minimum pressure for each node in the system over the 72-hour period. A copy of the full report is available in digital form and is saved at Q:\HYDDATTA\KYPIPE\NEW TANK2010\TANK ANALYSIS2010EPS.KYP\TANK ANALYSIS 2010EPS.doc. A copy of this report, under the file name TANK ANALYSIS 2010EPS.doc, along with the KY PIPE data is included on the enclosed CD-ROM.

Blumberg No. 5119
EXHIBIT
IX-10

FOREST HILLS
EXHIBIT 11

```
* * * * * * * * * *   K Y P I P E 5   * * * * * * * * * *
*                                                          *
*              Pipe Network Modeling Software              *
*                                                          *
*                Copyrighted by KYPIPE LLC                 *
*                Version 5 - February 2010                 *
*                                                          *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
```

Date & Time: Mon Dec 10 09:19:20 2012

Master File : Q:\HYDDATA\KYPIPE\New Tank 2010\tank analysis 2010 eps.P2K

```
************************************************
S U M M A R Y   O F   O R I G I N A L   D A T A
************************************************
```

U N I T S   S P E C I F I E D

FLOWRATE .... = gallons/minute
HEAD (HGL) .... = feet
PRESSURE .... = psig
METERED FLOW .... = gallons
POWER COST .... = 0.050 $/kW-Hr

R E G U L A T I N G   V A L V E   D A T A

VALVE LABEL	VALVE TYPE	VALVE SETTING (ft or gpm)
RV-1	PRV-1	1089.85
RV-2	PRV-1	1090.08
RV-R1	PRV-1	1090.08
RV-R2	PRV-1	1090.00

P I P E L I N E   D A T A

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	NODE NAMES #1	#2	LENGTH (ft)	DIAMETER (in)	ROUGHNESS COEFF.	MINOR LOSS COEFF.
1	52	239	2847.56	12.00	150.0000	4.70
2	13	107	1572.75	8.00	150.0000	4.70

FOREST HILLS
EXHIBIT 12

Blumberg No. 5119
EXHIBIT
IX-11

E P S   D A T A

TOTAL TIME FOR SIMULATION = 71.000
NORMAL TIME PERIOD FOR CALCULATIONS = 0.250
NORMAL TIME PERIOD FOR TABULATED OUTPUT = 1.000
NORMAL TIME PERIOD FOR POSTPROCESSING FILE = 0.250

EPS OUTPUT SELECTION: THE ABOVE TABULATED OUTPUT OPTIONS ARE INCLUDED WITH THE FOLLOWING EXTENDED PERIOD PRINT OPTIONS

INTERMEDIATE REPORTS (tank status, flow meter, regulating valve, etc.)
SUPPRESSED FOR ALL INTERMEDIATE TIME PERIODS
SUPPRESSED FOR ALL STATUS CHANGES (tanks, pressure switches, etc.)

V A R I A B L E   H E A D   T A N K   D A T A

TANK NAME (*)	MAXIMUM ELEVATION (ft)	MINIMUM ELEVATION (ft)	TANK CAPACITY (gal)	INITIAL VOLUME (gal)	EXTERNAL FLOW (gpm)
TANK-A(1)	1169.20	1153.00	54826.	3384.	0.00
TANK-B(1)	1171.00	1135.00	528802.	190956.	0.00
TANK-C(1)	1171.00	1133.00	1094032.	431855.	0.00

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

P R E S S U R E   S W I T C H   D A T A

REFERENCE ELEMENT	REFERENCE NODE	SWITCHING GRADES (ft)
Pump-1	89	1140.00 & 1170.00
Pump-1	291	1140.00 & 1154.00
AV-1	15	1133.00 & 1168.00

S Y S T E M   C O N F I G U R A T I O N

NUMBER OF PIPES ....(p) = 472
NUMBER OF END NODES ....(j) = 338
NUMBER OF PRIMARY LOOPS ....(l) = 130
NUMBER OF SUPPLY NODES ....(f) = 5
NUMBER OF SUPPLY ZONES ....(z) = 1

EXHIBIT
Blumberg No. 5119
IX-12

FOREST HILLS
EXHIBIT 13

```
FOLLOWING JUNCTION NODES
36
66
79
131
157
173
182
217
233
MAXIMUM AND MINIMUM PRESSURES        =   10
MAXIMUM AND MINIMUM HEAD LOSS/1000   =    5
```

E P S   D A T A

```
TOTAL TIME FOR SIMULATION                   =   71.000
NORMAL TIME PERIOD FOR CALCULATIONS         =    0.250
NORMAL TIME PERIOD FOR TABULATED OUTPUT     =    1.000
NORMAL TIME PERIOD FOR POSTPROCESSING FILE  =    0.250
```

```
EPS OUTPUT SELECTION:  THE ABOVE TABULATED OUTPUT OPTIONS ARE INCLUDED
                       WITH THE FOLLOWING EXTENDED PERIOD PRINT OPTIONS

    INTERMEDIATE REPORTS (tank status, flow meter, regulating valve, etc.)
        SUPPRESSED FOR ALL INTERMEDIATE TIME PERIODS
        SUPPRESSED FOR ALL STATUS CHANGES (tanks, pressure switches, etc.)
```

V A R I A B L E   H E A D   T A N K   D A T A

TANK NAME (*)	MAXIMUM ELEVATION (ft)	MINIMUM ELEVATION (ft)	TANK CAPACITY (gal)	INITIAL VOLUME (gal)	EXTERNAL FLOW (gpm)
TANK-A(1)	1169.20	1153.00	54826.	3384.	0.00
TANK-B(1)	1171.00	1135.00	528802.	190956.	0.00
TANK-C(1)	1171.00	1133.00	1094032.	431855.	0.00

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

P R E S S U R E   S W I T C H   D A T A

REFERENCE ELEMENT	REFERENCE NODE	SWITCHING GRADES (ft)
Pump-1	89	1140.00 & 1170.00
Pump-1	291	1140.00 & 1154.00
AV-1	15	1133.00 & 1168.00

S Y S T E M   C O N F I G U R A T I O N

```
NUMBER OF PIPES ...................(p) =   472
NUMBER OF END NODES ...............(j) =   338
NUMBER OF PRIMARY LOOPS ...........(l) =   130
NUMBER OF SUPPLY NODES ............(f) =     5
NUMBER OF SUPPLY ZONES ............(z) =     1
```

FOREST HILLS
EXHIBIT 14

EXHIBIT
Blumberg No. 5119
IX-13

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1236.22	KAWC Tank
TANK-A	162.98	Old Tank
TANK-B	-724.67	New Tank - P
TANK-C	-623.52	Chinkapin Ta

NET SYSTEM INFLOW = 1399.40
NET SYSTEM OUTFLOW = -1348.20
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T   (time = 0.0001 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-162.98	1154.00	1.00	3384.	6.2	DRAINING	0.28
TANK-B(1)	724.67	1148.00	13.00	190956.	36.1	FILLING	13.74
TANK-C(1)	623.52	1148.00	15.00	431855.	39.5	FILLING	15.32

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 0.250
Time: 0.364

TIME FROM INITIATION OF EPS = 0.3636 HOURS (0.36AM, DAY: 1)

RESULTS OBTAINED AFTER 16 TRIALS: ACCURACY = 0.00014

P I P E L I N E   R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

EXHIBIT
1X-14
Blumberg No. 5119

FOREST HILLS
EXHIBIT 15

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1236.22	KAWC Tank
TANK-A	162.98	Old Tank
TANK-B	-724.67	New Tank - P
TANK-C	-623.52	Chinkapin Ta

NET SYSTEM INFLOW = 1399.40
NET SYSTEM OUTFLOW = -1348.20
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T (time = 0.0001 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-162.98	1154.00	1.00	3384.	6.2	DRAINING	0.28
TANK-B(1)	724.67	1148.00	13.00	190956.	36.1	FILLING	13.74
TANK-C(1)	623.52	1148.00	15.00	431855.	39.5	FILLING	15.32

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 0.250
Time: 0.364

TIME FROM INITIATION OF EPS = 0.3636 HOURS (0.36AM, DAY: 1)

RESULTS OBTAINED AFTER 16 TRIALS: ACCURACY = 0.00014

P I P E L I N E   R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

FOREST HILLS
EXHIBIT 16

EXHIBIT
Blumberg No. 5119
IX-15

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1233.61	KAWC Tank
TANK-B	-659.86	New Tank - P
TANK-C	-522.74	Chinkapin Ta

NET SYSTEM INFLOW = 1233.81
NET SYSTEM OUTFLOW = -1182.61
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T   (time = 0.3636 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	659.86	1149.06	14.06	206595.	39.1	FILLING	14.43
TANK-C(1)	522.74	1148.47	15.47	445429.	40.7	FILLING	15.62

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 0.500
Time: 0.750
Time: 1.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 1.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

T A N K   S T A T U S   R E P O R T (time =   1.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	570.96	1150.74	15.74	231223.	43.7	FILLING	16.32
TANK-C(1)	532.02	1149.18	16.18	465844.	42.6	FILLING	16.46

* TANK TYPE: (1) - CONSTANT DIAMETER   (2) - VARIABLE AREA

===

Time: 1.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time =   1.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 1.250
Time: 1.500
Time: 1.750
Time: 2.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time =   2.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node   R-1 has a new HGL of   1158.000

T A N K   S T A T U S   R E P O R T   (time =   2.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	598.92	1152.98	17.98	264170.	50.0	FILLING	18.60
TANK-C(1)	617.30	1150.32	17.32	498775.	45.6	FILLING	17.65

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 2.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time =   2.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 2.250
Time: 2.500
Time: 2.750
Time: 3.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time =   3.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node R-1 has a new HGL of 1149.000

NET SYSTEM DEMAND = 128.00

T A N K   S T A T U S   R E P O R T (time = 3.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	42.31	1153.35	0.35	1186.	2.2	FILLING	0.54
TANK-B(1)	446.58	1155.33	20.33	298633.	56.5	FILLING	20.79
TANK-C(1)	584.92	1151.61	18.61	535803.	49.0	FILLING	18.92

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 3.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 3.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 3.250
Time: 3.500
Time: 3.750
Time: 4.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 4.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

NET SYSTEM DEMAND = 255.99

T A N K   S T A T U S   R E P O R T (time = 4.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	53.98	1154.28	1.28	4334.	7.9	FILLING	1.52
TANK-B(1)	282.76	1157.09	22.09	324505.	61.4	FILLING	22.38
TANK-C(1)	562.93	1152.83	19.83	570958.	52.2	FILLING	20.12

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 4.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 4.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 4.250
Time: 4.500
Time: 4.750
Time: 5.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 5.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-A	92.38	Old Tank
TANK-B	652.05	New Tank - P
TANK-C	-106.88	Chinkapin Ta

NET SYSTEM INFLOW = 746.85
NET SYSTEM OUTFLOW = -106.88
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T   (time = 5.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-92.38	1155.29	2.29	7759.	14.2	DRAINING	1.88
TANK-B(1)	-652.05	1158.23	23.23	341288.	64.5	DRAINING	22.57
TANK-C(1)	106.88	1154.00	21.00	604541.	55.3	FILLING	21.05

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 5.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 5.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 5.250
Time: 5.500
Time: 5.750
Time: 6.000

NAME	(gpm)	TITLE
FGN-BB	3.89	
R-1	0.00	KAWC Tank
TANK-A	62.42	Old Tank
TANK-B	656.18	New Tank - P
TANK-C	301.48	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K S T A T U S R E P O R T (time = 6.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-62.42	1154.10	1.10	3738.	6.8	DRAINING	0.83
TANK-B(1)	-656.18	1155.83	20.83	305974.	57.9	DRAINING	20.16
TANK-C(1)	-301.48	1154.04	21.04	605623.	55.4	DRAINING	20.88

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 6.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 6.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 6.250
Time: 6.500
Time: 6.750
Time: 7.000

```
      FGN-BB              3.40
      R-1                 0.00     KAWC Tank
      TANK-A             48.68     Old Tank
      TANK-B            500.53     New Tank - P
      TANK-C            343.35     Chinkapin Ta

 NET SYSTEM INFLOW  =     895.97
 NET SYSTEM OUTFLOW =       0.00
 NET SYSTEM DEMAND  =     895.97


 T A N K   S T A T U S   R E P O R T  (time =   7.0000 hours)

          TANK         NET      WATER    TANK      TANK     TANK    TANK
PROJECTED
          NAME         FLOW   ELEVATION  DEPTH    VOLUME   VOLUME  STATUS
DEPTH
          (*)          (gpm)    (ft)     (ft)      (gal)     (%)
(ft)
 -----------------------------------------------------------------------------
---
      TANK-A(1)      -48.68    1153.03    0.03       115.    0.2  DRAINING
0.00
      TANK-B(1)     -500.53    1153.29   18.29    268618.   50.8  DRAINING
18.21
      TANK-C(1)     -343.35    1153.33   20.33    585398.   53.5  DRAINING
20.31

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA


==============================================================================
===
Time:   7.039

 TIME FROM INITIATION OF EPS =   7.0393 HOURS (  7.04AM, DAY: 1)

 RESULTS OBTAINED AFTER    8 TRIALS: ACCURACY =     0.00023


 P I P E L I N E   R E S U L T S

   STATUS CODE:   XX -CLOSED PIPE    CV -CHECK VALVE

   P I P E             NODE NUMBERS      FLOWRATE      HEAD  MINOR    LINE
HL+ML/    HL/
   N A M E             #1        #2                    LOSS   LOSS    VELO.
1000     1000
                                           (gpm)        (ft)   (ft)   (ft/s)
 (ft/ft)  (ft/ft)
 ------------------------------------------------------------------------------
-------------
        11              4         7          20.75      0.30   0.00    0.53
0.31    0.31
```

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	97.64	73.60	27.71
RV-2	PRV-1	86.70	ACTIVATED	111.21	86.70	74.55
RV-R1	PRV-1	93.20	ACTIVATED	116.93	93.20	58.34
RV-R2	PRV-1	52.00	ACTIVATED	77.41	52.00	109.91

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.40	
R-1	0.00	KAWC Tank
TANK-A	48.92	Old Tank
TANK-B	497.81	New Tank - P
TANK-C	345.83	Chinkapin Ta

NET SYSTEM INFLOW = 895.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 895.97

TANK STATUS REPORT (time = 7.0393 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-48.92	1153.00	0.00	0.	0.0		0.00
TANK-B(1)	-497.81	1153.21	18.21	267437.	50.6	DRAINING	18.21
TANK-C(1)	-345.83	1153.31	20.31	584588.	53.4	DRAINING	20.30

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

T A N K   S T A T U S   R E P O R T (time =   7.0394 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-507.57	1153.21	18.21	267434.	50.6	DRAINING	17.77
TANK-C(1)	-384.99	1153.30	20.30	584586.	53.4	DRAINING	20.14

* TANK TYPE: (1) - CONSTANT DIAMETER   (2) - VARIABLE AREA

===

Time: 7.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time =   7.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 7.250
Time: 7.500
Time: 7.750
Time: 8.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time =   8.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node   R-1 has a new HGL of   1149.000
Time: 8.000

	(ft/ft)		(ft/ft)
303	2.65	187	0.00
20	1.39	227	0.00
470	1.31	248	0.00
296	1.25	437	0.00
304	1.10	391	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
303	1.41	187	0.00
20	1.39	227	0.00
296	1.09	248	0.00
263	0.78	437	0.00
242	0.61	391	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	98.98	73.60	13.31
RV-2	PRV-1	86.70	ACTIVATED	112.12	86.70	51.42
RV-R1	PRV-1	93.20	ACTIVATED	118.31	93.20	40.47
RV-R2	PRV-1	52.00	ACTIVATED	77.90	52.00	64.84

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	0.00	KAWC Tank
TANK-B	234.01	New Tank - P
TANK-C	327.03	Chinkapin Ta

NET SYSTEM INFLOW = 563.18
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T (time = 8.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-234.01	1151.30	16.30	239429.	45.3	DRAINING	16.06
TANK-C(1)	-327.03	1152.49	19.49	561148.	51.3	DRAINING	19.32

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 8.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 8.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 8.250
Time: 8.500
Time: 8.750
Time: 9.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 9.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node R-1 has a new HGL of 1163.000
Time: 9.000

TIME FROM INITIATION OF EPS = 9.0000 HOURS (9.00AM, DAY: 1)

RESULTS OBTAINED AFTER 9 TRIALS: ACCURACY = 0.00051

303	1.74	465	0.00
9	1.69	396	0.00
418	1.31	225	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
9	1.69	132	0.00
38	1.69	227	0.00
418	1.31	465	0.00
11	1.20	396	0.00
3	1.09	225	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.15	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	112.72	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	119.47	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	78.35	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	731.64	KAWC Tank
TANK-B	-346.39	New Tank - P
TANK-C	-2.72	Chinkapin Ta

NET SYSTEM INFLOW = 733.10
NET SYSTEM OUTFLOW = -349.11
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T (time = 9.0000 hours)

TANK NAME	NET FLOW	WATER ELEVATION	TANK DEPTH	TANK VOLUME	TANK VOLUME	TANK STATUS	PROJECTED DEPTH

```
        (*)            (gpm)     (ft)      (ft)       (gal)      (%)
(ft)
 ----------------------------------------------------------------------------
---
      TANK-A(1)         0.00    1153.00     0.00           0.    0.0    EMPTY
0.00
      TANK-B(1)       346.39    1150.39    15.39      226072.   42.8   FILLING
15.74
      TANK-C(1)         2.72    1151.80    18.80      541192.   49.5   FILLING
18.80

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA

=============================================================================
===
Time:   9.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =   9.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:   9.250
Time:   9.500
Time:   9.750
Time:  10.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  10.0000
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

 TANK at node        R-1  has a new HGL of                1161.000
Time:  10.000

 TIME FROM INITIATION OF EPS =  10.0000 HOURS ( 10.00AM, DAY: 1)

 RESULTS OBTAINED AFTER   8 TRIALS: ACCURACY =     0.00066


 P I P E L I N E   R E S U L T S
```

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
9	1.34	227	0.00
38	1.34	225	0.00
418	1.07	391	0.00
303	0.94	313	0.00
11	0.94	201	0.00

R E G U L A T I N G V A L V E R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.35	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	112.95	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	119.68	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	78.58	52.00	39.54

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	652.18	KAWC Tank
TANK-B	-193.91	New Tank - P
TANK-C	-75.74	Chinkapin Ta

NET SYSTEM INFLOW = 653.64
NET SYSTEM OUTFLOW = -269.65
NET SYSTEM DEMAND = 383.99

T A N K S T A T U S R E P O R T (time = 10.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)

```
     TANK-A(1)       0.00   1153.00    0.00         0.    0.0   EMPTY
0.00
     TANK-B(1)     193.91   1151.61   16.61    244027.   46.1  FILLING
16.81
     TANK-C(1)      75.74   1151.89   18.89    543775.   49.7  FILLING
18.93

    *  TANK TYPE:    (1) - CONSTANT DIAMETER    (2) - VARIABLE AREA

=============================================================================
===
Time:  10.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  10.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  10.250
Time:  10.500
Time:  10.750
Time:  11.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  11.0000
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

 TANK at node        R-1  has a new HGL of                1158.000
Time:  11.000

 TIME FROM INITIATION OF EPS =  11.0000 HOURS ( 11.00AM, DAY: 1)

 RESULTS OBTAINED AFTER    9 TRIALS: ACCURACY =     0.00025


 P I P E L I N E   R E S U L T S

   STATUS CODE:   XX -CLOSED PIPE    CV -CHECK VALVE
```

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
303	2.18	248	0.00
263	1.39	402	0.00
242	1.08	354	0.00
418	1.01	227	0.00
304	0.91	391	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	99.28	73.60	22.41
RV-2	PRV-1	86.70	ACTIVATED	111.92	86.70	65.44
RV-R1	PRV-1	93.20	ACTIVATED	118.52	93.20	51.25
RV-R2	PRV-1	52.00	ACTIVATED	77.95	52.00	92.77

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.91	
R-1	608.76	KAWC Tank
TANK-B	139.14	New Tank - P
TANK-C	17.15	Chinkapin Ta

NET SYSTEM INFLOW = 767.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 767.97

T A N K   S T A T U S   R E P O R T   (time = 11.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00

```
     TANK-B(1)    -139.14   1152.27   17.27     253692.  48.0  DRAINING
17.13
     TANK-C(1)     -17.15   1152.10   19.10     549942.  50.3  DRAINING
19.09

    *  TANK TYPE:    (1) - CONSTANT DIAMETER    (2) - VARIABLE AREA

=============================================================================
===
Time:  11.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  11.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  11.250
Time:  11.500
Time:  11.750
Time:  12.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  12.0000
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

 TANK at node        R-1  has a new HGL of              1156.000
Time:  12.000

 TIME FROM INITIATION OF EPS =  12.0000 HOURS ( 12.00AM, DAY: 1)

 RESULTS OBTAINED AFTER   8 TRIALS: ACCURACY =     0.00053


 P I P E L I N E   R E S U L T S

   STATUS CODE:   XX -CLOSED PIPE    CV -CHECK VALVE

   P I P E            NODE NUMBERS     FLOWRATE     HEAD  MINOR   LINE
 HL+ML/    HL/
```

	(ft/ft)		(ft/ft)
303	1.41	354	0.00
263	0.78	227	0.00
418	0.67	248	0.00
9	0.63	391	0.00
38	0.63	422	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	99.79	73.60	13.30
RV-2	PRV-1	86.70	ACTIVATED	112.49	86.70	51.41
RV-R1	PRV-1	93.20	ACTIVATED	119.09	93.20	40.46
RV-R2	PRV-1	52.00	ACTIVATED	78.28	52.00	64.83

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	489.54	KAWC Tank
TANK-B	19.98	New Tank - P
TANK-C	51.52	Chinkapin Ta

NET SYSTEM INFLOW = 563.17
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T (time = 12.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-19.98	1151.82	16.82	247090.	46.7	DRAINING	16.80

```
      TANK-C(1)     -51.52   1152.01   19.01     547434.  50.0  DRAINING
18.99

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA

=============================================================================
===
Time:  12.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  12.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  12.250
Time:  12.500
Time:  12.750
Time:  13.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  13.0000
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

 TANK at node        R-1  has a new HGL of                1154.000
Time:  13.000

 TIME FROM INITIATION OF EPS =  13.0000 HOURS (  1.00PM, DAY: 1)

 RESULTS OBTAINED AFTER   8 TRIALS: ACCURACY =     0.00041


 P I P E L I N E   R E S U L T S

   STATUS CODE:   XX -CLOSED PIPE    CV -CHECK VALVE

   P I P E            NODE NUMBERS     FLOWRATE     HEAD  MINOR   LINE
HL+ML/    HL/
   N A M E            #1         #2                 LOSS   LOSS   VELO.
1000     1000
```

303	1.25	227	0.00
263	0.66	248	0.00
242	0.51	391	0.00
418	0.41	225	0.00
304	0.38	467	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	99.82	73.60	10.80
RV-2	PRV-1	86.70	ACTIVATED	112.58	86.70	48.09
RV-R1	PRV-1	93.20	ACTIVATED	119.13	93.20	37.97
RV-R2	PRV-1	52.00	ACTIVATED	78.31	52.00	57.71

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.94	
R-1	372.30	KAWC Tank
TANK-B	55.91	New Tank - P
TANK-C	81.82	Chinkapin Ta

NET SYSTEM INFLOW = 511.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 511.98

T A N K   S T A T U S   R E P O R T (time = 13.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-55.91	1151.74	16.74	245859.	46.5	DRAINING	16.68
TANK-C(1)	-81.82	1151.91	18.91	544477.	49.8	DRAINING	18.87

38	0.36	391	0.00
418	0.31	225	0.00
3	0.25	156	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	CLOSED	100.26	73.64	0.00
RV-2	PRV-1	86.70	ACTIVATED	113.05	86.70	33.51
RV-R1	PRV-1	93.20	ACTIVATED	119.67	93.20	24.18
RV-R2	PRV-1	52.00	ACTIVATED	78.59	52.00	19.59

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.97	
R-1	331.15	KAWC Tank
TANK-B	-93.58	New Tank - P
TANK-C	17.45	Chinkapin Ta

NET SYSTEM INFLOW = 349.57
NET SYSTEM OUTFLOW = -93.58
NET SYSTEM DEMAND = 255.99

T A N K   S T A T U S   R E P O R T   (time = 14.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	93.58	1151.53	16.53	242839.	45.9	FILLING	16.63
TANK-C(1)	-17.45	1151.74	18.74	539516.	49.3	DRAINING	18.73

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

20	0.29	391	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	99.76	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	112.72	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	119.11	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	78.35	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	0.00	KAWC Tank
TANK-B	221.87	New Tank - P
TANK-C	160.66	Chinkapin Ta

NET SYSTEM INFLOW = 383.99
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T   (time = 15.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-221.87	1151.78	16.78	246537.	46.6	DRAINING	16.56
TANK-C(1)	-160.66	1151.76	18.76	540155.	49.4	DRAINING	18.68

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	98.33	73.60	16.85
RV-2	PRV-1	86.70	ACTIVATED	111.55	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	117.65	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	77.41	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-B	337.64	New Tank - P
TANK-C	299.91	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 16.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-337.64	1150.96	15.96	234416.	44.3	DRAINING	15.61
TANK-C(1)	-299.91	1151.39	18.39	529325.	48.4	DRAINING	18.23

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	95.24	73.60	32.85
RV-2	PRV-1	86.70	ACTIVATED	109.04	86.70	83.83
RV-R1	PRV-1	93.20	ACTIVATED	114.50	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	75.45	52.00	126.90

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	0.00	KAWC Tank
TANK-B	538.06	New Tank - P
TANK-C	482.02	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T (time = 17.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-538.06	1149.65	14.65	215209.	40.7	DRAINING	14.10
TANK-C(1)	-482.02	1150.72	17.72	510279.	46.6	DRAINING	17.47

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 17.250

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	94.48	73.60	32.84
RV-2	PRV-1	86.70	ACTIVATED	108.30	86.70	83.83
RV-R1	PRV-1	93.20	ACTIVATED	113.75	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	74.71	52.00	126.90

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	0.00	KAWC Tank
TANK-B	490.63	New Tank - P
TANK-C	529.45	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T   (time = 18.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-490.63	1147.54	12.54	184178.	34.8	DRAINING	12.04
TANK-C(1)	-529.45	1149.68	16.68	480280.	43.9	DRAINING	16.41

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 18.250

```
                    (psi or gpm)            (psi)      (psi)     (gpm)
---------------------------------------------------------------------------
---
       RV-1    PRV-1    73.60  ACTIVATED    95.57       73.60       22.41
       RV-2    PRV-1    86.70  ACTIVATED   108.99       86.70       65.44
       RV-R1   PRV-1    93.20  ACTIVATED   114.88       93.20       51.25
       RV-R2   PRV-1    52.00  ACTIVATED    75.01       52.00       92.77
```

```
S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

       NODE        FLOWRATE       NODE
       NAME         (gpm)         TITLE
     -------------------------------------------
      FGN-BB           2.91
      R-1              0.00      KAWC Tank
      TANK-B         272.09      New Tank - P
      TANK-C         492.96      Chinkapin Ta

NET SYSTEM INFLOW  =     767.97
NET SYSTEM OUTFLOW =       0.00
NET SYSTEM DEMAND  =     767.97
```

```
T A N K   S T A T U S   R E P O R T  (time =  19.0000 hours)

         TANK         NET      WATER     TANK      TANK      TANK     TANK
PROJECTED
         NAME         FLOW   ELEVATION   DEPTH     VOLUME    VOLUME   STATUS
DEPTH
          (*)         (gpm)     (ft)      (ft)      (gal)      (%)
(ft)
---------------------------------------------------------------------------
---
      TANK-A(1)        0.00   1153.00     0.00           0.    0.0    EMPTY
0.00
      TANK-B(1)     -272.09   1145.59    10.59     155594.   29.4   DRAINING
10.31
      TANK-C(1)     -492.96   1148.55    15.55     447659.   40.9   DRAINING
15.29

    *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA
```

```
===========================================================================
===
Time:  19.250
```

```
 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  19.2500
hours)
```

RV-1	PRV-1	73.60	ACTIVATED	95.82	73.60	16.85
RV-2	PRV-1	86.70	ACTIVATED	109.06	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	115.15	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	74.92	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-B	169.23	New Tank - P
TANK-C	468.31	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T   (time = 20.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-169.23	1144.49	9.49	139367.	26.4	DRAINING	9.32
TANK-C(1)	-468.31	1147.52	14.52	417983.	38.2	DRAINING	14.27

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 20.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 20.2500 hours)

RV-R1	PRV-1	93.20	ACTIVATED	114.82	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	74.59	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-B	184.26	New Tank - P
TANK-C	453.28	Chinkapin Ta

NET SYSTEM INFLOW = 639.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 21.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-184.26	1143.77	8.77	128848.	24.4	DRAINING	8.58
TANK-C(1)	-453.28	1146.55	13.55	390249.	35.7	DRAINING	13.32

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

==

Time: 21.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 21.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.94	
R-1	0.00	KAWC Tank
TANK-B	91.55	New Tank - P
TANK-C	418.49	Chinkapin Ta

NET SYSTEM INFLOW = 511.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 511.98

T A N K   S T A T U S   R E P O R T (time = 22.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-91.55	1143.00	8.00	117542.	22.2	DRAINING	7.91
TANK-C(1)	-418.49	1145.62	12.62	363302.	33.2	DRAINING	12.40

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 22.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 22.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 22.250

(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.49	
R-1	0.00	KAWC Tank
TANK-B	-186.73	New Tank - P
TANK-C	314.24	Chinkapin Ta

NET SYSTEM INFLOW = 314.73
NET SYSTEM OUTFLOW = -186.73
NET SYSTEM DEMAND = 128.00

T A N K S T A T U S R E P O R T (time = 23.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	186.73	1142.58	7.58	111323.	21.1	FILLING	7.77
TANK-C(1)	-314.24	1144.77	11.77	338919.	31.0	DRAINING	11.61

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 23.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 23.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 23.250
Time: 23.500
Time: 23.750
Time: 24.000

```
         NAME          (gpm)          TITLE
     -------------------------------------------
       FGN-BB             0.19
       R-1              593.13      KAWC Tank
       TANK-B          -397.21      New Tank - P
       TANK-C          -144.92      Chinkapin Ta

 NET SYSTEM INFLOW   =    593.33
 NET SYSTEM OUTFLOW =    -542.13
 NET SYSTEM DEMAND   =     51.20


 T A N K   S T A T U S   R E P O R T  (time =  24.0000 hours)

          TANK          NET      WATER     TANK      TANK      TANK     TANK
PROJECTED
          NAME          FLOW   ELEVATION   DEPTH     VOLUME    VOLUME   STATUS
DEPTH
          (*)          (gpm)     (ft)      (ft)      (gal)      (%)
(ft)
 -----------------------------------------------------------------------------
---
      TANK-A(1)         0.00   1153.00     0.00          0.     0.0    EMPTY
0.00
      TANK-B(1)       397.21   1143.19     8.19     120286.    22.7   FILLING
8.59
      TANK-C(1)       144.92   1144.19    11.19     322305.    29.5   FILLING
11.27

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA

 =============================================================================
===
Time:  24.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  24.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  24.250
Time:  24.500
Time:  24.750
Time:  25.000
```

FGN-BB	0.19	
R-1	0.00	KAWC Tank
TANK-B	65.23	New Tank - P
TANK-C	-14.22	Chinkapin Ta

NET SYSTEM INFLOW = 65.42
NET SYSTEM OUTFLOW = -14.22
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T (time = 25.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-65.23	1144.63	9.63	141483.	26.8	DRAINING	9.57
TANK-C(1)	14.22	1144.57	11.57	333010.	30.4	FILLING	11.57

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 25.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 25.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 25.250
Time: 25.500
Time: 25.750
Time: 26.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 26.0000 hours)

```
     TANK-B            -366.33     New Tank - P
     TANK-C            -265.02     Chinkapin Ta

 NET SYSTEM INFLOW  =     682.55
 NET SYSTEM OUTFLOW =    -631.35
 NET SYSTEM DEMAND  =      51.20


 T A N K   S T A T U S   R E P O R T  (time =  26.0000 hours)

         TANK         NET      WATER     TANK       TANK      TANK     TANK
PROJECTED
         NAME         FLOW   ELEVATION  DEPTH      VOLUME    VOLUME   STATUS
DEPTH
         (*)         (gpm)     (ft)      (ft)       (gal)      (%)
(ft)
 ----------------------------------------------------------------------------
---
      TANK-A(1)       0.00   1153.00     0.00          0.     0.0    EMPTY
0.00
      TANK-B(1)     366.33   1144.50     9.50     139612.    26.4   FILLING
9.88
      TANK-C(1)     265.02   1144.53    11.53     331821.    30.3   FILLING
11.66

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA


=============================================================================
===
Time:  26.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  26.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  26.250
Time:  26.500
Time:  26.750
Time:  27.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  27.0000
hours)
```

NET SYSTEM INFLOW = 353.23
NET SYSTEM OUTFLOW = -225.23
NET SYSTEM DEMAND = 128.00

T A N K S T A T U S R E P O R T (time = 27.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	16.46	1145.88	10.88	159820.	30.2	FILLING	10.90
TANK-C(1)	208.77	1145.12	12.12	348836.	31.9	FILLING	12.23

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 27.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 27.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 27.250
Time: 27.500
Time: 27.750
Time: 28.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 28.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

NET SYSTEM DEMAND = 255.99

T A N K S T A T U S R E P O R T (time = 28.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-220.37	1145.99	10.99	161502.	30.5	DRAINING	10.77
TANK-C(1)	-34.65	1145.52	12.52	360465.	32.9	DRAINING	12.50

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 28.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 28.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 28.250
Time: 28.500
Time: 28.750
Time: 29.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 29.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

T A N K   S T A T U S   R E P O R T   (time = 29.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-132.13	1145.26	10.26	150770.	28.5	DRAINING	10.13
TANK-C(1)	-122.88	1145.36	12.36	355895.	32.5	DRAINING	12.30

* TANK TYPE: (1) - CONSTANT DIAMETER   (2) - VARIABLE AREA

===

Time: 29.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 29.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 29.250
Time: 29.500
Time: 29.750
Time: 30.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 30.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node   R-1 has a new HGL of   1128.000
Time: 30.000

TIME FROM INITIATION OF EPS = 30.0000 HOURS (6.00AM, DAY: 2)

303	6.70	248	0.00
304	4.04	99	0.00
263	2.41	108	0.00
296	2.37	213	0.00
470	2.27	391	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
303	3.44	248	0.00
263	2.37	99	0.00
296	2.07	108	0.00
20	1.92	213	0.00
242	1.83	391	0.00

R E G U L A T I N G V A L V E R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	93.22	73.60	32.85
RV-2	PRV-1	86.70	ACTIVATED	106.86	86.70	83.83
RV-R1	PRV-1	93.20	ACTIVATED	112.48	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	73.27	52.00	126.90

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	44.56	
R-1	0.00	KAWC Tank
TANK-B	547.85	New Tank - P
TANK-C	431.55	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K S T A T U S R E P O R T (time = 30.0000 hours)

TANK NET WATER TANK TANK TANK TANK
PROJECTED

NAME (*)	FLOW (gpm)	ELEVATION (ft)	DEPTH (ft)	VOLUME (gal)	VOLUME (%)	STATUS	DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-547.85	1144.78	9.78	143640.	27.2	DRAINING	9.22
TANK-C(1)	-431.55	1145.08	12.08	347725.	31.8	DRAINING	11.85

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 30.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 30.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 30.250
Time: 30.500
Time: 30.750
Time: 31.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 31.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node R-1 has a new HGL of 1137.000
Time: 31.000

TIME FROM INITIATION OF EPS = 31.0000 HOURS (7.00AM, DAY: 2)

RESULTS OBTAINED AFTER 8 TRIALS: ACCURACY = 0.00024

296	2.21	225	0.00

H L / 1 0 0 0

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
303	2.77	248	0.00
20	2.23	213	0.00
296	1.93	227	0.00
263	1.85	391	0.00
242	1.43	225	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	93.49	73.60	27.71
RV-2	PRV-1	86.70	ACTIVATED	106.93	86.70	74.55
RV-R1	PRV-1	93.20	ACTIVATED	112.77	93.20	58.34
RV-R2	PRV-1	52.00	ACTIVATED	73.14	52.00	109.91

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	51.07	
R-1	0.00	KAWC Tank
TANK-B	407.41	New Tank - P
TANK-C	437.49	Chinkapin Ta

NET SYSTEM INFLOW = 895.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 895.97

T A N K   S T A T U S   R E P O R T (time = 31.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)

TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-407.41	1142.67	7.67	112708.	21.3	DRAINING	7.26
TANK-C(1)	-437.49	1144.15	11.15	320890.	29.3	DRAINING	10.92

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===
===

Time: 31.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 31.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 31.250
Time: 31.500
Time: 31.750
Time: 32.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 32.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node R-1 has a new HGL of 1149.000
Time: 32.000

TIME FROM INITIATION OF EPS = 32.0000 HOURS (8.00AM, DAY: 2)

RESULTS OBTAINED AFTER 14 TRIALS: ACCURACY = 0.00024

P I P E L I N E R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NUMBER	MAXIMUM HL/1000 (ft/ft)	PIPE NUMBER	MINIMUM HL/1000 (ft/ft)
303	1.41	354	0.00
20	1.28	143	0.00
9	1.03	227	0.00
38	1.03	248	0.00
418	0.97	391	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	95.49	73.60	13.31
RV-2	PRV-1	86.70	ACTIVATED	108.19	86.70	51.42
RV-R1	PRV-1	93.20	ACTIVATED	114.78	93.20	40.47
RV-R2	PRV-1	52.00	ACTIVATED	73.97	52.00	64.84

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	607.70	KAWC Tank
TANK-B	-254.14	New Tank - P
TANK-C	207.48	Chinkapin Ta

NET SYSTEM INFLOW = 817.31
NET SYSTEM OUTFLOW = -254.14
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T   (time = 32.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00

```
     TANK-B(1)      254.14    1141.10     6.10       89659.   17.0  FILLING
6.36
     TANK-C(1)     -207.48    1143.21    10.21      294083.   26.9  DRAINING
10.11

   *  TANK TYPE:     (1) - CONSTANT DIAMETER      (2) - VARIABLE AREA

=============================================================================
===
Time:  32.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  32.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  32.250
Time:  32.500
Time:  32.750
Time:  33.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  33.0000
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

 TANK at node        R-1  has a new HGL of               1163.000
Time:  33.000

 TIME FROM INITIATION OF EPS =  33.0000 HOURS (  9.00AM, DAY: 2)

 RESULTS OBTAINED AFTER   9 TRIALS: ACCURACY =     0.00036


 P I P E L I N E   R E S U L T S

   STATUS CODE:   XX -CLOSED PIPE    CV -CHECK VALVE

   P I P E             NODE NUMBERS     FLOWRATE     HEAD  MINOR   LINE
HL+ML/    HL/
```

	(ft/ft)		(ft/ft)
9	2.86	227	0.00
38	2.86	151	0.00
11	2.10	117	0.00
418	2.09	225	0.00
296	2.01	391	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	96.86	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	109.08	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	116.13	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	74.70	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	948.92	KAWC Tank
TANK-B	-401.49	New Tank - P
TANK-C	-164.90	Chinkapin Ta

NET SYSTEM INFLOW = 950.38
NET SYSTEM OUTFLOW = -566.39
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T   (time = 33.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	401.49	1141.96	6.96	102209.	19.3	FILLING	7.37

TANK-C(1)   164.90   1142.87   9.87   284203.   26.0 FILLING
9.96

* TANK TYPE: (1) - CONSTANT DIAMETER   (2) - VARIABLE AREA

==
===
Time: 33.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 33.2500
hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 33.250
Time: 33.500
Time: 33.750
Time: 34.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 34.0000
hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

TANK at node   R-1 has a new HGL of   1161.000
Time: 34.000

TIME FROM INITIATION OF EPS = 34.0000 HOURS (10.00AM, DAY: 2)

RESULTS OBTAINED AFTER   8 TRIALS: ACCURACY =   0.00038

P I P E L I N E   R E S U L T S

STATUS CODE: XX -CLOSED PIPE   CV -CHECK VALVE

P I P E   NODE NUMBERS   FLOWRATE   HEAD   MINOR   LINE
HL+ML/   HL/
N A M E   #1   #2   LOSS   LOSS   VELO.
1000   1000

9	2.46	151	0.00
38	2.46	227	0.00
296	1.86	225	0.00
418	1.83	391	0.00
11	1.80	201	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	97.14	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	109.42	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	116.42	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	75.05	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	881.10	KAWC Tank
TANK-B	-272.57	New Tank - P
TANK-C	-226.00	Chinkapin Ta

NET SYSTEM INFLOW = 882.55
NET SYSTEM OUTFLOW = -498.57
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T   (time = 34.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	272.57	1143.43	8.43	123782.	23.4	FILLING	8.71
TANK-C(1)	226.00	1143.29	10.29	296126.	27.1	FILLING	10.40

38	2.04	391	0.00
418	1.90	213	0.00
3	1.52	225	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	96.11	73.60	22.41
RV-2	PRV-1	86.70	ACTIVATED	108.52	86.70	65.44
RV-R1	PRV-1	93.20	ACTIVATED	115.33	93.20	51.25
RV-R2	PRV-1	52.00	ACTIVATED	74.55	52.00	92.77

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.91	
R-1	874.08	KAWC Tank
TANK-B	41.11	New Tank - P
TANK-C	-150.13	Chinkapin Ta

NET SYSTEM INFLOW = 918.10
NET SYSTEM OUTFLOW = -150.13
NET SYSTEM DEMAND = 767.97

T A N K   S T A T U S   R E P O R T (time = 35.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-41.11	1144.44	9.44	138701.	26.2	DRAINING	9.40
TANK-C(1)	150.13	1143.79	10.79	310665.	28.4	FILLING	10.87

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

3	1.20	201	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	96.76	73.60	13.31
RV-2	PRV-1	86.70	ACTIVATED	109.25	86.70	51.42
RV-R1	PRV-1	93.20	ACTIVATED	116.04	93.20	40.47
RV-R2	PRV-1	52.00	ACTIVATED	75.04	52.00	64.84

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	770.98	KAWC Tank
TANK-B	-71.56	New Tank - P
TANK-C	-138.38	Chinkapin Ta

NET SYSTEM INFLOW = 773.12
NET SYSTEM OUTFLOW = -209.94
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T (time = 36.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	71.56	1144.35	9.35	137321.	26.0	FILLING	9.42
TANK-C(1)	138.38	1144.07	11.07	318586.	29.1	FILLING	11.14

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	96.94	73.60	10.80
RV-2	PRV-1	86.70	ACTIVATED	109.50	86.70	48.09
RV-R1	PRV-1	93.20	ACTIVATED	116.24	93.20	37.97
RV-R2	PRV-1	52.00	ACTIVATED	75.23	52.00	57.71

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.94	
R-1	689.04	KAWC Tank
TANK-B	-50.56	New Tank - P
TANK-C	-128.44	Chinkapin Ta

NET SYSTEM INFLOW = 690.98
NET SYSTEM OUTFLOW = -179.00
NET SYSTEM DEMAND = 511.98

T A N K   S T A T U S   R E P O R T (time = 37.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	50.56	1144.63	9.63	141480.	26.8	FILLING	9.68
TANK-C(1)	128.44	1144.35	11.35	326834.	29.9	FILLING	11.42

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	CLOSED	97.63	73.64	0.00
RV-2	PRV-1	86.70	ACTIVATED	110.16	86.70	33.51
RV-R1	PRV-1	93.20	ACTIVATED	116.99	93.20	24.18
RV-R2	PRV-1	52.00	ACTIVATED	75.70	52.00	19.60

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.97	
R-1	619.41	KAWC Tank
TANK-B	-182.02	New Tank - P
TANK-C	-182.37	Chinkapin Ta

NET SYSTEM INFLOW = 620.38
NET SYSTEM OUTFLOW = -364.39
NET SYSTEM DEMAND = 255.99

T A N K   S T A T U S   R E P O R T (time = 38.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	182.02	1144.84	9.84	144578.	27.3	FILLING	10.03
TANK-C(1)	182.37	1144.61	11.61	334311.	30.6	FILLING	11.71

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 38.250

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	97.39	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	110.08	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	116.73	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	75.70	52.00	39.54

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	430.37	KAWC Tank
TANK-B	73.88	New Tank - P
TANK-C	-121.72	Chinkapin Ta

NET SYSTEM INFLOW = 505.71
NET SYSTEM OUTFLOW = -121.72
NET SYSTEM DEMAND = 383.99

T A N K S T A T U S R E P O R T (time = 39.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-73.88	1145.51	10.51	154401.	29.2	DRAINING	10.44
TANK-C(1)	121.72	1145.01	12.01	345914.	31.6	FILLING	12.08

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 39.250

		(psi or gpm)		(psi)	(psi)	(gpm)
RV-1	PRV-1	73.60	ACTIVATED	96.18	73.60	16.85
RV-2	PRV-1	86.70	ACTIVATED	109.14	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	115.49	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	75.01	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	127.34	KAWC Tank
TANK-B	300.11	New Tank - P
TANK-C	210.10	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T   (time = 40.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-300.11	1145.32	10.32	151659.	28.7	DRAINING	10.02
TANK-C(1)	-210.10	1145.21	12.21	351654.	32.1	DRAINING	12.10

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 40.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 40.2500 hours)

RV-1	PRV-1	73.60	ACTIVATED	93.85	73.60	32.85
RV-2	PRV-1	86.70	ACTIVATED	106.97	86.70	83.84
RV-R1	PRV-1	93.20	ACTIVATED	113.05	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	73.39	52.00	126.90

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	235.86	KAWC Tank
TANK-B	418.76	New Tank - P
TANK-C	365.46	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T (time = 41.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-418.76	1144.25	9.25	135920.	25.7	DRAINING	8.83
TANK-C(1)	-365.46	1144.75	11.75	338329.	30.9	DRAINING	11.56

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 41.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 41.2500 hours)

RV-R1	PRV-1	93.20	ACTIVATED	112.37	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	72.80	52.00	126.90

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	198.21	KAWC Tank
TANK-B	399.96	New Tank - P
TANK-C	421.90	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T (time = 42.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-399.96	1142.69	7.69	112904.	21.4	DRAINING	7.28
TANK-C(1)	-421.90	1143.97	10.97	315855.	28.9	DRAINING	10.75

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

==

Time: 42.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 42.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	54.65	
R-1	0.00	KAWC Tank
TANK-B	294.46	New Tank - P
TANK-C	418.86	Chinkapin Ta

NET SYSTEM INFLOW = 767.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 767.97

T A N K   S T A T U S   R E P O R T   (time = 43.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-294.46	1141.18	6.18	90822.	17.2	DRAINING	5.88
TANK-C(1)	-418.86	1143.08	10.08	290223.	26.5	DRAINING	9.86

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 43.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 43.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 43.250

(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	56.47	
R-1	0.00	KAWC Tank
TANK-B	181.75	New Tank - P
TANK-C	401.76	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T   (time = 44.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-181.75	1140.04	5.04	74070.	14.0	DRAINING	4.86
TANK-C(1)	-401.76	1142.20	9.20	264865.	24.2	DRAINING	8.99

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 44.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 44.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 44.250
Switch Activated

P R E S S U R E   S W I T C H E S   A C T I V A T E D

RV-2	PRV-1	86.70	ACTIVATED	108.06	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	115.08	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	73.93	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	1145.00	KAWC Tank
TANK-B	-373.96	New Tank - P
TANK-C	-133.49	Chinkapin Ta

NET SYSTEM INFLOW = 1147.43
NET SYSTEM OUTFLOW = -507.45
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T   (time = 45.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	373.96	1141.08	6.08	89284.	16.9	FILLING	6.46
TANK-C(1)	133.49	1142.06	9.06	260741.	23.8	FILLING	9.13

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 45.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 45.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	108.88	86.70	48.09
RV-R1	PRV-1	93.20	ACTIVATED	116.23	93.20	37.97
RV-R2	PRV-1	52.00	ACTIVATED	74.62	52.00	57.71

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.94	
R-1	1200.48	KAWC Tank
TANK-B	-392.15	New Tank - P
TANK-C	-298.29	Chinkapin Ta

NET SYSTEM INFLOW = 1202.42
NET SYSTEM OUTFLOW = -690.44
NET SYSTEM DEMAND = 511.98

T A N K   S T A T U S   R E P O R T   (time = 46.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	392.15	1142.45	7.45	109437.	20.7	FILLING	7.85
TANK-C(1)	298.29	1142.41	9.41	270884.	24.8	FILLING	9.56

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 46.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 46.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	110.49	86.70	25.52
RV-R1	PRV-1	93.20	ACTIVATED	119.36	93.20	13.13
RV-R2	PRV-1	52.00	CLOSED	75.97	52.01	0.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.49	
R-1	1210.69	KAWC Tank
TANK-B	-587.42	New Tank - P
TANK-C	-495.76	Chinkapin Ta

NET SYSTEM INFLOW = 1211.18
NET SYSTEM OUTFLOW = -1083.18
NET SYSTEM DEMAND = 128.00

T A N K   S T A T U S   R E P O R T (time = 47.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	587.42	1143.95	8.95	131472.	24.9	FILLING	9.55
TANK-C(1)	495.76	1143.08	10.08	290078.	26.5	FILLING	10.33

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 47.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 47.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	111.68	86.70	10.20
RV-R1	PRV-1	93.20	ACTIVATED	121.26	93.20	5.25
RV-R2	PRV-1	52.00	CLOSED	77.05	52.03	0.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1284.64	KAWC Tank
TANK-B	-631.78	New Tank - P
TANK-C	-601.86	Chinkapin Ta

NET SYSTEM INFLOW = 1284.83
NET SYSTEM OUTFLOW = -1233.64
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T (time = 48.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	631.78	1146.25	11.25	165254.	31.3	FILLING	11.90
TANK-C(1)	601.86	1144.15	11.15	320990.	29.3	FILLING	11.46

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 48.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 48.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	112.42	86.70	10.20
RV-R1	PRV-1	93.20	ACTIVATED	121.54	93.20	5.25
RV-R2	PRV-1	52.00	CLOSED	77.79	52.03	0.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1172.49	KAWC Tank
TANK-B	-509.97	New Tank - P
TANK-C	-611.51	Chinkapin Ta

NET SYSTEM INFLOW = 1172.68
NET SYSTEM OUTFLOW = -1121.48
NET SYSTEM DEMAND = 51.20

T A N K   S T A T U S   R E P O R T   (time = 49.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	509.97	1148.74	13.74	201849.	38.2	FILLING	14.26
TANK-C(1)	611.51	1145.44	12.44	358091.	32.7	FILLING	12.76

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 49.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 49.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	113.35	86.70	10.20
RV-R1	PRV-1	93.20	ACTIVATED	122.99	93.20	5.25
RV-R2	PRV-1	52.00	CLOSED	78.72	52.03	0.00

S U M M A R Y O F I N F L O W S A N D O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.19	
R-1	1285.62	KAWC Tank
TANK-B	-558.56	New Tank - P
TANK-C	-676.06	Chinkapin Ta

NET SYSTEM INFLOW = 1285.82
NET SYSTEM OUTFLOW = -1234.62
NET SYSTEM DEMAND = 51.20

T A N K S T A T U S R E P O R T (time = 50.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	558.56	1150.76	15.76	231526.	43.8	FILLING	16.33
TANK-C(1)	676.06	1146.73	13.73	395412.	36.1	FILLING	14.09

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 50.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 50.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	113.88	86.70	25.52
RV-R1	PRV-1	93.20	ACTIVATED	122.87	93.20	13.13
RV-R2	PRV-1	52.00	CLOSED	79.36	52.01	0.00

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.49	
R-1	1219.53	KAWC Tank
TANK-B	-424.21	New Tank - P
TANK-C	-667.81	Chinkapin Ta

NET SYSTEM INFLOW = 1220.01
NET SYSTEM OUTFLOW = -1092.02
NET SYSTEM DEMAND = 128.00

T A N K   S T A T U S   R E P O R T   (time = 51.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	424.21	1152.98	17.98	264109.	49.9	FILLING	18.41
TANK-C(1)	667.81	1148.16	15.16	436598.	39.9	FILLING	15.51

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 51.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 51.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	114.24	86.70	33.51
RV-R1	PRV-1	93.20	ACTIVATED	122.48	93.20	24.18
RV-R2	PRV-1	52.00	ACTIVATED	79.80	52.00	19.60

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.97	
R-1	1173.08	KAWC Tank
TANK-B	-272.04	New Tank - P
TANK-C	-646.02	Chinkapin Ta

NET SYSTEM INFLOW = 1174.05
NET SYSTEM OUTFLOW = -918.06
NET SYSTEM DEMAND = 255.99

T A N K   S T A T U S   R E P O R T (time = 52.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	272.04	1154.68	19.68	289054.	54.7	FILLING	19.96
TANK-C(1)	646.02	1149.57	16.57	476913.	43.6	FILLING	16.90

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

==

Time: 52.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 52.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	113.43	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	120.73	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	79.32	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	1138.54	KAWC Tank
TANK-B	34.49	New Tank - P
TANK-C	-535.48	Chinkapin Ta

NET SYSTEM INFLOW = 1175.45
NET SYSTEM OUTFLOW = -535.48
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 53.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-34.49	1155.80	20.80	305470.	57.8	DRAINING	20.76
TANK-C(1)	535.48	1150.90	17.90	515390.	47.1	FILLING	18.18

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 53.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 53.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

RV-2	PRV-1	86.70	ACTIVATED	111.70	86.70	83.84
RV-R1	PRV-1	93.20	ACTIVATED	118.88	93.20	65.57
RV-R2	PRV-1	52.00	ACTIVATED	78.14	52.00	126.90

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	1114.00	KAWC Tank
TANK-A	24.88	Old Tank
TANK-B	258.40	New Tank - P
TANK-C	-377.20	Chinkapin Ta

NET SYSTEM INFLOW =   1401.16
NET SYSTEM OUTFLOW =   -377.20
NET SYSTEM DEMAND =   1023.96

T A N K   S T A T U S   R E P O R T   (time = 54.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-24.88	1153.18	0.18	603.	1.1	DRAINING	0.07
TANK-B(1)	-258.40	1155.73	20.73	304449.	57.6	DRAINING	20.46
TANK-C(1)	377.20	1151.96	18.96	545835.	49.9	FILLING	19.16

* TANK TYPE: (1) - CONSTANT DIAMETER   (2) - VARIABLE AREA

===

Time: 54.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 54.2500 hours)

RV-2	PRV-1	86.70	ACTIVATED	112.32	86.70	74.55
RV-R1	PRV-1	93.20	ACTIVATED	119.47	93.20	58.34
RV-R2	PRV-1	52.00	ACTIVATED	78.55	52.00	109.91

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.40	
R-1	1194.81	KAWC Tank
TANK-A	-35.22	Old Tank
TANK-B	35.07	New Tank - P
TANK-C	-302.09	Chinkapin Ta

NET SYSTEM INFLOW = 1233.28
NET SYSTEM OUTFLOW = -337.31
NET SYSTEM DEMAND = 895.97

T A N K   S T A T U S   R E P O R T (time = 55.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	35.22	1153.20	0.20	692.	1.3	FILLING	0.36
TANK-B(1)	-35.07	1154.81	19.81	290976.	55.0	DRAINING	19.77
TANK-C(1)	302.09	1152.62	19.62	564972.	51.6	FILLING	19.78

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

Time: 55.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 55.2500 hours)

RV-2	PRV-1	86.70	ACTIVATED	113.80	86.70	51.42
RV-R1	PRV-1	93.20	ACTIVATED	121.23	93.20	40.47
RV-R2	PRV-1	52.00	ACTIVATED	79.59	52.00	64.84

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	1252.31	KAWC Tank
TANK-A	-50.81	Old Tank
TANK-B	-280.88	New Tank - P
TANK-C	-359.57	Chinkapin Ta

NET SYSTEM INFLOW = 1254.44
NET SYSTEM OUTFLOW = -691.26
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T   (time = 56.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	50.81	1153.75	0.75	2542.	4.6	FILLING	0.98
TANK-B(1)	280.88	1154.75	19.75	290036.	54.8	FILLING	20.03
TANK-C(1)	359.57	1153.22	20.22	582172.	53.2	FILLING	20.41

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 56.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 56.2500 hours)

303	0.94	248	0.00

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	101.86	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	114.39	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	121.19	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	80.02	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	599.18	KAWC Tank
TANK-A	10.04	Old Tank
TANK-B	76.08	New Tank - P
TANK-C	-302.77	Chinkapin Ta

NET SYSTEM INFLOW = 686.76
NET SYSTEM OUTFLOW = -302.77
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T   (time = 57.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-10.04	1154.64	1.64	5537.	10.1	DRAINING	1.59
TANK-B(1)	-76.08	1155.85	20.85	306222.	57.9	DRAINING	20.77
TANK-C(1)	302.77	1153.99	20.99	604298.	55.2	FILLING	21.15

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	101.77	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	114.37	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	121.11	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	80.00	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	524.69	KAWC Tank
TANK-A	-9.71	Old Tank
TANK-B	72.94	New Tank - P
TANK-C	-205.39	Chinkapin Ta

NET SYSTEM INFLOW = 599.09
NET SYSTEM OUTFLOW = -215.11
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T (time = 58.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	9.71	1154.84	1.84	6232.	11.4	FILLING	1.88
TANK-B(1)	-72.94	1155.62	20.62	302843.	57.3	DRAINING	20.54
TANK-C(1)	205.39	1154.54	21.54	620053.	56.7	FILLING	21.64

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.39	73.60	22.41
RV-2	PRV-1	86.70	ACTIVATED	113.13	86.70	65.44
RV-R1	PRV-1	93.20	ACTIVATED	119.65	93.20	51.25
RV-R2	PRV-1	52.00	ACTIVATED	79.16	52.00	92.77

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.91	
R-1	471.67	KAWC Tank
TANK-A	32.74	Old Tank
TANK-B	248.93	New Tank - P
TANK-C	11.71	Chinkapin Ta

NET SYSTEM INFLOW = 767.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 767.97

T A N K   S T A T U S   R E P O R T (time = 59.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-32.74	1155.07	2.07	6997.	12.8	DRAINING	1.92
TANK-B(1)	-248.93	1155.42	20.42	299915.	56.7	DRAINING	20.16
TANK-C(1)	-11.71	1154.91	21.91	630802.	57.7	DRAINING	21.90

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.85	73.60	13.31
RV-2	PRV-1	86.70	ACTIVATED	113.65	86.70	51.42
RV-R1	PRV-1	93.20	ACTIVATED	120.16	93.20	40.47
RV-R2	PRV-1	52.00	ACTIVATED	79.43	52.00	64.84

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.14	
R-1	321.70	KAWC Tank
TANK-A	16.64	Old Tank
TANK-B	110.16	New Tank - P
TANK-C	112.55	Chinkapin Ta

NET SYSTEM INFLOW = 563.18
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 563.18

T A N K   S T A T U S   R E P O R T (time = 60.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-16.64	1154.74	1.74	5899.	10.8	DRAINING	1.67
TANK-B(1)	-110.16	1154.61	19.61	288011.	54.5	DRAINING	19.49
TANK-C(1)	-112.55	1154.77	21.77	626644.	57.3	DRAINING	21.71

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.70	73.60	10.80
RV-2	PRV-1	86.70	ACTIVATED	113.57	86.70	48.09
RV-R1	PRV-1	93.20	ACTIVATED	120.03	93.20	37.97
RV-R2	PRV-1	52.00	ACTIVATED	79.30	52.00	57.71

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.94	
R-1	148.86	KAWC Tank
TANK-A	27.79	Old Tank
TANK-B	166.52	New Tank - P
TANK-C	166.87	Chinkapin Ta

NET SYSTEM INFLOW = 511.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 511.98

T A N K   S T A T U S   R E P O R T (time = 61.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-27.79	1154.47	1.47	4975.	9.1	DRAINING	1.35
TANK-B(1)	-166.52	1154.22	19.22	282312.	53.4	DRAINING	19.05
TANK-C(1)	-166.87	1154.52	21.52	619487.	56.6	DRAINING	21.43

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	CLOSED	101.10	73.64	0.00
RV-2	PRV-1	86.70	ACTIVATED	113.95	86.70	33.51
RV-R1	PRV-1	93.20	ACTIVATED	120.51	93.20	24.18
RV-R2	PRV-1	52.00	ACTIVATED	79.49	52.00	19.60

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	0.97	
R-1	130.04	KAWC Tank
TANK-A	10.71	Old Tank
TANK-B	-33.06	New Tank - P
TANK-C	147.33	Chinkapin Ta

NET SYSTEM INFLOW = 289.05
NET SYSTEM OUTFLOW = -33.06
NET SYSTEM DEMAND = 255.99

T A N K   S T A T U S   R E P O R T (time = 62.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-10.71	1154.04	1.04	3506.	6.4	DRAINING	0.99
TANK-B(1)	33.06	1153.64	18.64	273807.	51.8	FILLING	18.67
TANK-C(1)	-147.33	1154.15	21.15	609005.	55.7	DRAINING	21.08

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	100.63	73.60	3.61
RV-2	PRV-1	86.70	ACTIVATED	113.60	86.70	40.29
RV-R1	PRV-1	93.20	ACTIVATED	119.99	93.20	32.49
RV-R2	PRV-1	52.00	ACTIVATED	79.22	52.00	39.54

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	1.46	
R-1	0.00	KAWC Tank
TANK-A	28.33	Old Tank
TANK-B	192.25	New Tank - P
TANK-C	161.95	Chinkapin Ta

NET SYSTEM INFLOW = 383.99
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 383.99

T A N K   S T A T U S   R E P O R T   (time = 63.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-28.33	1153.85	0.85	2874.	5.2	DRAINING	0.72
TANK-B(1)	-192.25	1153.69	18.69	274494.	51.9	DRAINING	18.49
TANK-C(1)	-161.95	1153.89	20.89	601499.	55.0	DRAINING	20.81

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

R E G U L A T I N G   V A L V E   R E P O R T

VALVE LABEL	VALVE TYPE	VALVE SETTING (psi or gpm)	VALVE STATUS	UPSTREAM PRESSURE (psi)	DOWNSTREAM PRESSURE (psi)	THROUGH FLOW (gpm)
RV-1	PRV-1	73.60	ACTIVATED	99.24	73.60	16.85
RV-2	PRV-1	86.70	ACTIVATED	112.46	86.70	56.57
RV-R1	PRV-1	93.20	ACTIVATED	118.56	93.20	44.40
RV-R2	PRV-1	52.00	ACTIVATED	78.32	52.00	75.40

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-A	44.35	Old Tank
TANK-B	319.48	New Tank - P
TANK-C	273.72	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 64.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-44.35	1153.38	0.38	1275.	2.3	DRAINING	0.18
TANK-B(1)	-319.48	1152.97	17.97	263889.	49.9	DRAINING	17.64
TANK-C(1)	-273.72	1153.52	20.52	590751.	54.0	DRAINING	20.38

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-A	42.91	Old Tank
TANK-B	296.76	New Tank - P
TANK-C	297.88	Chinkapin Ta

NET SYSTEM INFLOW = 639.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 64.4846 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	-42.91	1153.00	0.00	0.	0.0		0.00
TANK-B(1)	-296.76	1152.34	17.34	254775.	48.2	DRAINING	17.34
TANK-C(1)	-297.88	1153.24	20.24	582606.	53.3	DRAINING	20.24

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Tank Filled/Emptied

TIME FROM INITIATION OF EPS = 64.4846 HOURS (28.48PM, DAY: 2)

RESULTS OBTAINED AFTER 8 TRIALS: ACCURACY = 0.00031

P I P E L I N E   R E S U L T S

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

P I P E N A M E	NODE NUMBERS #1	#2	FLOWRATE (gpm)	HEAD LOSS (ft)	MINOR LOSS (ft)	LINE VELO. (ft/s)	HL+ML/ 1000 (ft/ft)	HL/ 1000 (ft/ft)

S U M M A R Y   O F   I N F L O W S   A N D   O U T F L O W S

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	0.00	KAWC Tank
TANK-B	533.92	New Tank - P
TANK-C	486.15	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T   (time = 65.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-533.92	1151.71	16.71	245443.	46.4	DRAINING	16.16
TANK-C(1)	-486.15	1152.88	19.88	572221.	52.3	DRAINING	19.62

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 65.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N   (time = 65.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 65.250

(-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE (gpm)	NODE TITLE
FGN-BB	3.89	
R-1	0.00	KAWC Tank
TANK-B	487.27	New Tank - P
TANK-C	532.80	Chinkapin Ta

NET SYSTEM INFLOW = 1023.96
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 1023.96

T A N K   S T A T U S   R E P O R T (time = 66.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-487.27	1149.60	14.60	214520.	40.6	DRAINING	14.11
TANK-C(1)	-532.80	1151.82	18.82	541939.	49.5	DRAINING	18.55

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 66.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 66.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 66.250
Time: 66.500
Time: 66.750
Time: 67.000

NAME	(gpm)	TITLE
FGN-BB	2.91	
R-1	0.00	KAWC Tank
TANK-B	268.94	New Tank - P
TANK-C	496.12	Chinkapin Ta

NET SYSTEM INFLOW = 767.97
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 767.97

T A N K   S T A T U S   R E P O R T (time = 67.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-268.94	1147.67	12.67	186117.	35.2	DRAINING	12.40
TANK-C(1)	-496.12	1150.68	17.68	509137.	46.5	DRAINING	17.43

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 67.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 67.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 67.250
Time: 67.500
Time: 67.750
Time: 68.000

FGN-BB	2.43	
R-1	0.00	KAWC Tank
TANK-B	166.79	New Tank - P
TANK-C	470.75	Chinkapin Ta

NET SYSTEM INFLOW = 639.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 639.98

T A N K   S T A T U S   R E P O R T (time = 68.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-166.79	1146.58	11.58	170056.	32.2	DRAINING	11.41
TANK-C(1)	-470.75	1149.65	16.65	479295.	43.8	DRAINING	16.40

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 68.250

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 68.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 68.250
Time: 68.500
Time: 68.750
Time: 69.000

C H A N G E S   F O R   N E X T   S I M U L A T I O N (time = 69.0000 hours)

```
     TANK-B            182.61     New Tank - P
     TANK-C            454.94     Chinkapin Ta

NET SYSTEM INFLOW  =    639.98
NET SYSTEM OUTFLOW =      0.00
NET SYSTEM DEMAND  =    639.98


T A N K   S T A T U S   R E P O R T  (time =  69.0000 hours)

         TANK         NET       WATER    TANK       TANK      TANK    TANK
PROJECTED
         NAME         FLOW    ELEVATION  DEPTH     VOLUME    VOLUME  STATUS
DEPTH
         (*)          (gpm)     (ft)     (ft)       (gal)      (%)
(ft)
 -----------------------------------------------------------------------------
---
      TANK-A(1)        0.00   1153.00    0.00          0.    0.0    EMPTY
0.00
      TANK-B(1)     -182.61   1145.87   10.87     159664.   30.2  DRAINING
10.68
      TANK-C(1)     -454.94   1148.68   15.68     451434.   41.3  DRAINING
15.44

     *  TANK TYPE:    (1) - CONSTANT DIAMETER     (2) - VARIABLE AREA

==============================================================================
===
Time:  69.250


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  69.2500
hours)


 UNIT COST OF POWER FOR THIS SIMULATION PERIOD =  0.050 $/kW-Hr


 JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time:  69.250
Time:  69.500
Time:  69.750
Time:  70.000


 C H A N G E S   F O R   N E X T   S I M U L A T I O N  (time =  70.0000
hours)
```

NET SYSTEM INFLOW = 511.98
NET SYSTEM OUTFLOW = 0.00
NET SYSTEM DEMAND = 511.98

T A N K S T A T U S R E P O R T (time = 70.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	-90.31	1145.11	10.11	148446.	28.1	DRAINING	10.01
TANK-C(1)	-419.73	1147.74	14.74	424399.	38.8	DRAINING	14.52

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Time: 70.250

C H A N G E S F O R N E X T S I M U L A T I O N (time = 70.2500 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

Time: 70.250
Time: 70.500
Time: 70.750
Time: 71.000

C H A N G E S F O R N E X T S I M U L A T I O N (time = 71.0000 hours)

UNIT COST OF POWER FOR THIS SIMULATION PERIOD = 0.050 $/kW-Hr

NET SYSTEM DEMAND = 128.00

T A N K   S T A T U S   R E P O R T (time = 71.0000 hours)

TANK NAME (*)	NET FLOW (gpm)	WATER ELEVATION (ft)	TANK DEPTH (ft)	TANK VOLUME (gal)	TANK VOLUME (%)	TANK STATUS	PROJECTED DEPTH (ft)
TANK-A(1)	0.00	1153.00	0.00	0.	0.0	EMPTY	0.00
TANK-B(1)	187.53	1144.69	9.69	142292.	26.9	FILLING	9.88
TANK-C(1)	-315.03	1146.89	13.89	399951.	36.6	DRAINING	13.73

* TANK TYPE: (1) - CONSTANT DIAMETER (2) - VARIABLE AREA

===

Total Power Cost

****

TOTAL POWER COST($) FOR THIS SIMULATION = 15.32

****

===

Max/Min Summary

****
Summary of Max/Min Node Values
****

Node	MnPres	MnHead	MnHGL	MnTime	MxPres	MxHead	MxHGL	MxTime	Elevation
1	66.70	153.93	1138.93	43.75	78.19	180.45	1165.45	2.75	985.0
2	69.04	159.31	1139.31	44.25	79.11	182.55	1162.55	3.75	980.0
3	69.75	160.97	1137.97	31.75	86.29	199.13	1176.13	2.75	977.0

TANK "A" USAGE DURING EPS

Page of .pdf	Time of EPS	Volume (gal)	Percentage of Capacity
24	0.00001	3,384	6.2%
33	0.3636	0	0
38	1.0000	0	0
43	2.0000	0	0
48	3.0000	1,186	2.2%
53	4.0000	4,334	7.9%
62	5.0000	7,759	14.2%
67	6.0000	3,738	6.8%
72	7.0000	115	0.2%
76	7.0393	0	0
81	7.0394	0	0
85-86	8.0000	0	0
90-91	9.0000	0	0
95-96	10.0000	0	0
100-101	11.0000	0	0
105-106	12.0000	0	0
110	13.0000	0	0
115	14.0000	0	0
120	15.0000	0	0
125	16.0000	0	0
130	17.0000	0	0
135	18.0000	0	0
140	19.0000	0	0
145	20.0000	0	0
150	21.0000	0	0
155	22.0000	0	0
160	23.0000	0	0
165	24.0000	0	0
170	25.0000	0	0
175	26.0000	0	0
180	27.0000	0	0
185	28.0000	0	0
190	29.0000	0	0
194-195	30.0000	0	0
199-200	31.0000	0	0
204-205	32.0000	0	0
209-210	33.0000	0	0
214	34.0000	0	0
219	35.0000	0	0
224	36.0000	0	0
229	37.0000	0	0

FOREST HILLS
EXHIBIT 17

EXHIBIT
IX-16
Blumberg No. 5119

234	38.0000	0	0
239	39.0000	0	0
244	40.0000	0	0
249	41.0000	0	0
254	42.0000	0	0
259	43.0000	0	0
264	44.0000	0	0
269	45.0000	0	0
274	46.0000	0	0
279	47.0000	0	0
284	48.0000	0	0
289	49.0000	0	0
294	50.0000	0	0
299	51.0000	0	0
304	52.0000	0	0
309	53.0000	0	0
314	54.0000	603	1.1%
319	55.0000	692	1.3%
324	56.0000	2,542	4.6%
333	57.0000	5,537	10.1%
338	58.0000	6,232	11.4%
343	59.0000	6,997	12.8%
348	60.0000	5,899	10.8%
353	61.0000	4,975	9.1%
358	62.0000	3,506	6.4%
363	63.0000	2,874	5.2%
368	64.0000	1,275	2.3%
373	64.4846	0	0
382	65.0000	0	0
387	66.0000	0	0
392	67.0000	0	0
397	68.0000	0	0
402	69.0000	0	0
407	70.0000	0	0
412	71.0000	0	0

Jessamine-South Elkhorn Water District

Information Request No. 14 List all complaints that Jessamine-South Elkhorn Water District has received since January 1, 2009 regarding "low water pressure" in its northwest service area.

Answer: **See attached.**

[Witness: Glenn T. Smith]

FOREST HILLS
EXHIBIT 18

Blumberg No. 5119
EXHIBIT
IX-17

2009

Complaint Form

Location: 1111 South Elkhorn Rd Date: May 20 2009 Time: ____

Person making complaint: John Beasley

Address: 1111 South Elkhorn Rd

Phone: (Res) 859-489 4416 (Work) ____

Person receiving the complaint: Mr Beasley

COMPLAINT: Low Water Pressure

PROPERTY DAMAGE: None

ACTION TAKEN BY SERVICEMAN: Took Static Pressure 3 Locations Hydrant at Garage 120 PSI Away From House Front of House 94 psi Back of House at Basement Faucet 98 PSI

Date problem corrected ____ Time: ____

Person making service call: Glenn T. Smith

Additional information: No problem Found ask about Filtration System - Water Softner Filters

2010

Complaint Form

Location: 112 PARKER LANE Date: April 2010 Time: 9:00AM

Person making complaint: Mr DONALD DIX

Address: 112 Parkers Lane

Phone: (Res) 343-9800 (Work)

Person receiving the complaint: PATTY

COMPLAINT: LOW WATER PRESSURE

PROPERTY DAMAGE: NON

ACTION TAKEN BY SERVICEMAN: TOOK PRESSURE AT House Static 101 PSI Risdual 94 PSI

Date problem corrected april 20 2012 Time: 1:00pm

Person making service call: Glenn T. Smith

Additional information: Took Pressure Reading Pressure Good Quest home owner about water Softner - Filternation System - Nothing Found wrong with Pressure

2010

Crosswoods **Complaint Form** 2010
Subdivision

Location: 201 Sunntree Date: April 21 Time: 8:30AM

Person making complaint: Holly Bosse

Address: 201 Sunntree

Phone: (Res) ________________ (Work) ________________

Person receiving the complaint: ________________

COMPLAINT: Low WAter Pressure

PROPERTY DAMAGE: NONE

ACTION TAKEN BY SERVICEMAN: TOOK PRESSURE At house Static 80 PSI Residual 74 PSI NO Problem Found

Date problem corrected ________________ Time: ________________

Person making service call: GLENN T. Smith

Additional information: ~~Check~~ TALKED to home owner about water Softner Filters and Filtration System Filters

2011

Complaint Form

Location: BArKLEY ESTATES Date: april 19 2011 Time: 2:00pm

Person making complaint: Christinia LANO

Address: 149 BArKLEY Estates

Phone: (Res) 859-893-6478 (Work)

Person receiving the complaint: PAtty

COMPLAINT: LOW WATEr ~~B~~rESSure

PROPERTY DAMAGE: NON

ACTION TAKEN BY SERVICEMAN: TOOK StAtic PrESSure 104 Static PSI

Risdual 80 NO prodlEN FouND

Date problem corrected ~~[illegible]~~ april 19 2011 Time: 4:00pm

Person making service call: GLENN T. Smith

Additional information: WE ~~Bo~~ Replaced Subdivision 4 inch main to NEW 6 in main with Fire protection NEW hydrANt every 500 feet.

2012

Complaint Form

Location: 139 Murphy Lane Date: Dec 7 -12 Time: 3:00pm

Person making complaint: Mr. Gibson

Address: 139 Murphy Lane

Phone: (Res) 421-5422 (Work) ______

Person receiving the complaint: DiANiA

COMPLAINT: Low Pressure

PROPERTY DAMAGE: NONE

ACTION TAKEN BY SERVICEMAN: Took Static Pressure 85PSI TOOK RiSduAL 82 PSI - Told Mr. Gibson pressure was good - Then he Explain poor Pressure July-Aug

Date problem corrected ______ Time: ______

Person making service call: GLENN Smith

Additional information: we where Regulated PCV PiTS At This Time -

2012

Complaint Form

Location: Luther Deaton Date: July 30 Time: 7:00pm

Person making complaint: Mr. Deaton

Address: 8099 Harrodsburg Rd

Phone: (Res) 533-3333 (Work)

Person receiving the complaint: Ron Eldridge

COMPLAINT: Low Water Pressure

PROPERTY DAMAGE: Mr Deaton's Mow Main Head
hit dog House with mower Brok off Sprinkler

ACTION TAKEN BY SERVICEMAN:

Shut off Sprinkler System

Date problem corrected July 30 2012 Time: 9:00am

Person making service call: Ron Eldridge

Additional information:

2012

Complaint Form

Location: Christian Ach Date: Aug 23 Time: 6:00pm

Person making complaint: Mrs Ach

Address: 500 Cave Springs Dr

Phone: (Res) 881-1077 (Work)

Person receiving the complaint: GLENN Smith

COMPLAINT: Low Water Pressure

PROPERTY DAMAGE: Lighting hit water main at vale Blew Line out of ground

ACTION TAKEN BY SERVICEMAN: Repair Main

Date problem corrected Aug 23 2012 Time: 10:30pm

Person making service call: GLENN Smith

Additional information:

2009

SouthEast **Complaint Form**

Location: 1240 WAttS MiLLRd Date: Dec 15 2009 Time: 3:00pm

Person making complaint: Ross TANNER

Address: 1240 watts mill Rd

Phone: (Res) 859-509-8951 (Work)

Person receiving the complaint:

COMPLAINT: Low WATEr Pressure

PROPERTY DAMAGE: NON

ACTION TAKEN BY SERVICEMAN: TOOK Pressure 50 PSI Adjusted Customers PrV vale to 85 PSI Static Pressure

Date problem corrected Dec 15 2009 Time: 4:00pm

Person making service call: Glenn T. Smith

Additional information:

6 2011

Complaint Form

Location: 2000 Lock 8 Rd Date: April 25 2011 Time: 9:00 AM

Person making complaint: RODNEY LAUNERS

Address: 2000 Lock 8 Rd

Phone: (Res) 859- 3969993 (Work)

Person receiving the complaint: PATTY

COMPLAINT: LOW WATER PRESSURE

PROPERTY DAMAGE: NON

ACTION TAKEN BY SERVICEMAN: Check water Pressure 30 PSI Static Adjusted Customer PRV 80 PSI Static

Date problem corrected April 25 2011 Time: 4:00pm

Person making service call: GLENN T. Smith

Additional information:

2012

Complaint Form

Location: 506 ChAndAMEr WAY Date: 2012 July 24 Time: 8:30AM

Person making complaint: Mr SPENCEr Rutherford

Address: 506 chandamir way

Phone: (Res) ____________ (Work) ____________

Person receiving the complaint: Patty

COMPLAINT: LOW WATEr PrESSurE

PROPERTY DAMAGE: NONE

ACTION TAKEN BY SERVICEMAN: OPEN VALE CLEAr creake THEN REAdjusted 2 PrV Pits more · Pressure

Date problem corrected July 24 2012 Time: 10:30 AM

Person making service call: GLENN T. Smith

Additional information: This WAS iN A Period when we where Trying to Reduce Pressure iN THE SOuthWEST Portion District

January 5, 2011

Jessamine South Elkhorn Water District
802 South Main Street
Nicholasville, KY 40356

Gentlemen:

This is to advise you that Forest Hills Owners Association requests the Jessamine South Elkhorn Water District to locate its new proposed water storage tank on the property of Mr. and Mrs. Ron Brown which fronts on Old U. S. Highway and abuts your existing water tower property. If you are inclined to do this, it is our intent to pay the purchase price for the Browns in the amount of $65,000.00. As part of the condition of this payment, is that you would transfer to our Association the acre of ground located on the South side of property of Forest Hills Subdivision near Chinkapin Drive, that you presently acquired from Sue Switzer. This letter of intent shall remain open for a period of ninety (90) days from the date of this letter. Should you wish to contact us or discuss any details of this proposal, we would be happy to meet with you at any time.

Very truly yours,

W. J. Bater, Pres.
Forest Hills Owners Association

EXHIBIT
1

Blumberg No. 5119

EXHIBIT
GROUP "G"

tabbies

FOREST HILLS
EXHIBIT 19

January 5, 2011

Jessamine South Elkhorn Water District
802 South Main Street
Nicholasville, KY 40356

Gentlemen:

This is to advise you that the undersigned do hereby give their intent to sell to you an acre of land situated on the east side of Old U. S. 68 which would be adjacent to the north side of your existing water tower site, which is located just north of the Catnip Hill Pike with the lot be of the identical depth of your existing water tank site and with said width running north and parallel with U. S. 68 to include one acre of land. It is our understanding that you would use this property for additional water tower site. It would be our intention to sell this property for $65,000.00. This letter of intent shall remain open for a period three (3) months of the date of this letter. It is understood that you and/or your agents may enter this property for the purpose of determining the feasibility of the placement of the water tower with the only reservation that you restore to its present condition.

Very truly yours,

Ronald W Brown

Ronald W. Brown

Jane Hunter Brown

EXHIBIT
Blumberg No. 5119
2

FOREST HILLS
EXHIBIT 20

QUALIFICATION OF APPRAISER

E. Clark Toleman, MAI

PROFESSIONAL MEMBERSHIP:

MAI	Member of the Appraisal Institute
SRPA -	MAI No. 7572
SRA -	General Certification – Kentucky Real Estate Appraisers Board No. 109.

Member of the Commercial Property Association of Lexington.

Member of the International Rights of Way Association.
Licensed Real Estate Broker State of Kentucky.
Lexington Board of Realtors.
Kentucky Association of Realtors.
National Association of Realtors.

BIRTH DATE: Lexington, Kentucky – May 11, 1948.

EDUCATION:

Graduated: West Australia Institute of Technology, Perth Australia – Diploma in Business Studies, Major in Real Estate Valuation, 1974.

Completed all course requirements for the Australian Institute of Values, the American Institute of Real Estate Appraisers and Society of Real Estate Appraisers

Participating in Continuing Education through Seminars and Courses by the Appraisal Institute.

EXPERIENCE: Full time career in all phases of Real Estate, Employed in Proper Management, Office Development, Leasing and Valuation. Real Estate Appraiser in Lexington, Kentucky since 1974. Owner and Manager of Investment Property. Self employed and Owner of E. Clark Toleman Real Estate Appraisal Services.

APPRAISAL CLIENTS:

Financial Institutions:

Bank of Lexington, First Security National Bank, Bank One, Citizens Fidelity Bank in Lexington, First National Bank Of Louisville, Fifth Third Bank of Campbell County. Recent non-bank lender clients include: The Travelers Realty Investment Company, Memphis,

FOREST HILLS
EXHIBIT 21

Blumberg No. 5119 EXHIBIT 9

Tennessee: New York Life, Atlanta, Georgia: Aegon USA Realty Advisors of Cedar Rapids, Iowa.

Governmental Institutions:

Lexington Fayette Urban County Government, Corps of Engineers, U.S. Department of Justice, General Services Administration, U.S. Postal Services, Census Bureau, Resolution Trust Corporation, FDIC, FSLIC, Commonwealth of Kentucky, Transportation Cabinet.

APPRAISED FOR:

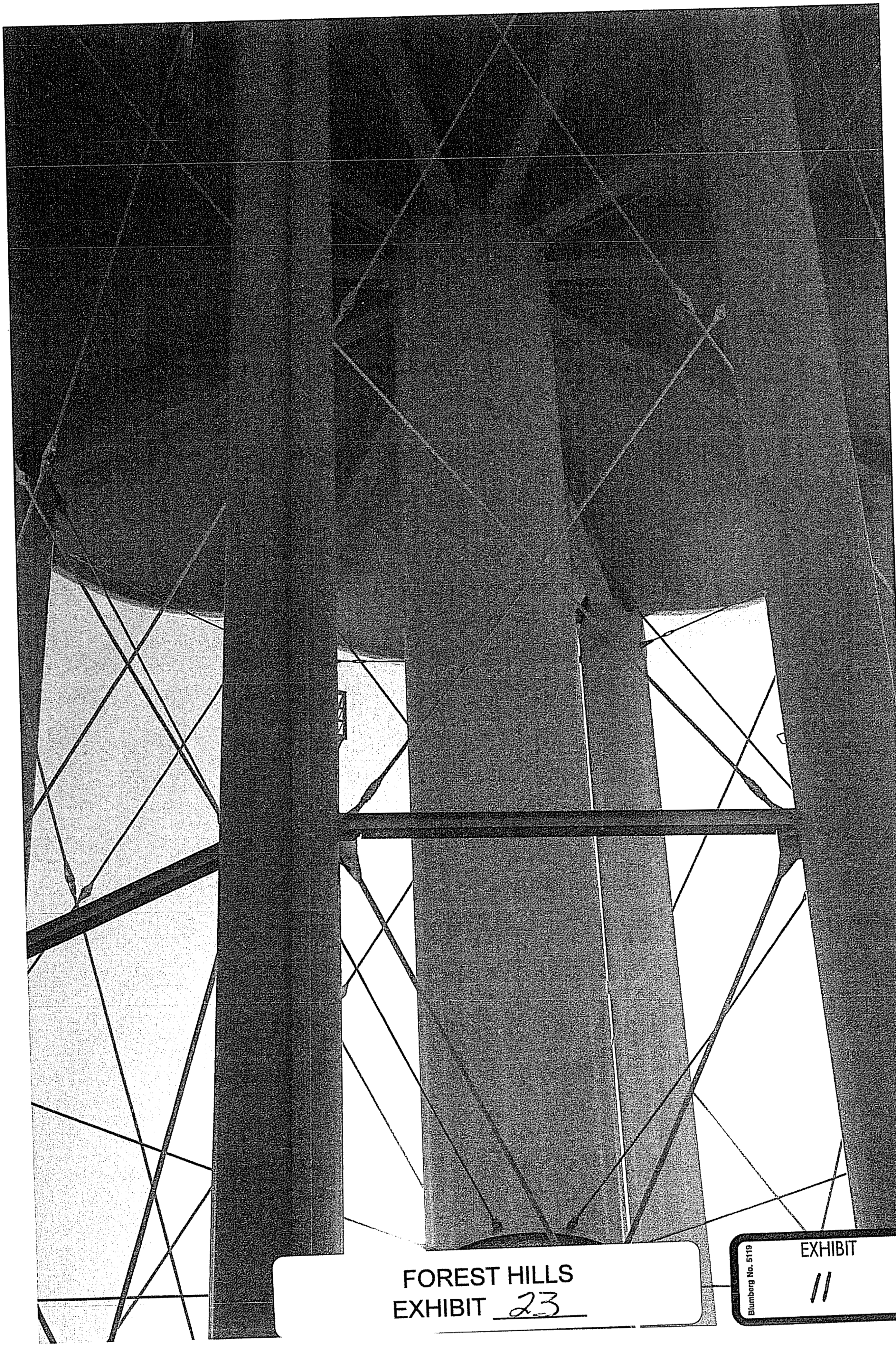
Major Horse Farms. Full Range of Commercial Properties, Multi-Family Residential, Condemnation cases for Plaintiff and Defendants, Internal Revenue Service, Utility Companies, Four Flood Control Lane Projects, Urban Renewal, Major Industrial Properties and Highway Rights of Way.

QUALIFIED AS EXPERT IN REAL ESTATE VALUES:

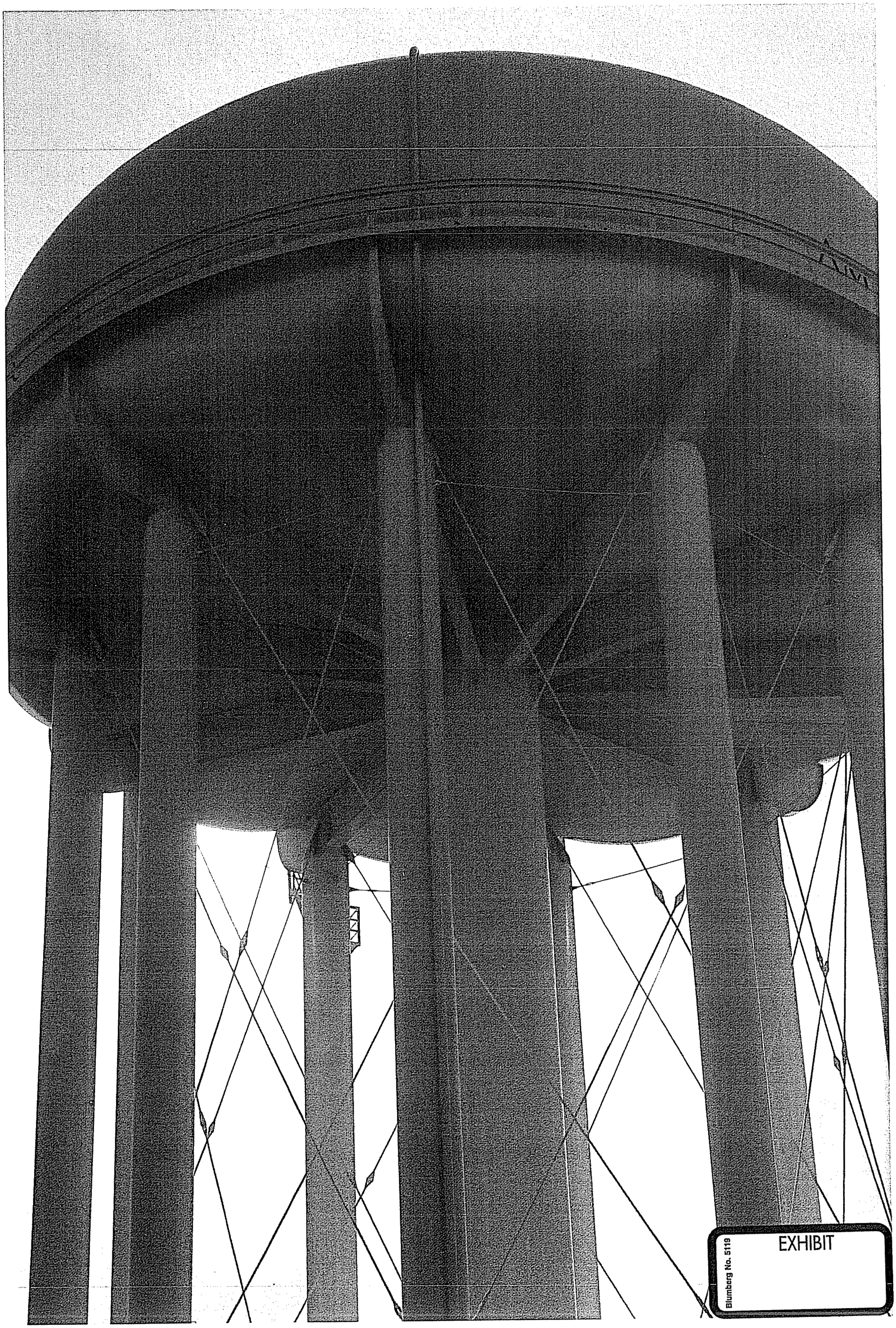
Federal Court of Kentucky – Eastern and Western Division. Testified in Local Tax Appeal Cases. Circuit Court of Clark County, Kentucky. United States Bankruptcy Court.

Blumberg No. 5119
EXHIBIT
10

FOREST HILLS
EXHIBIT 22

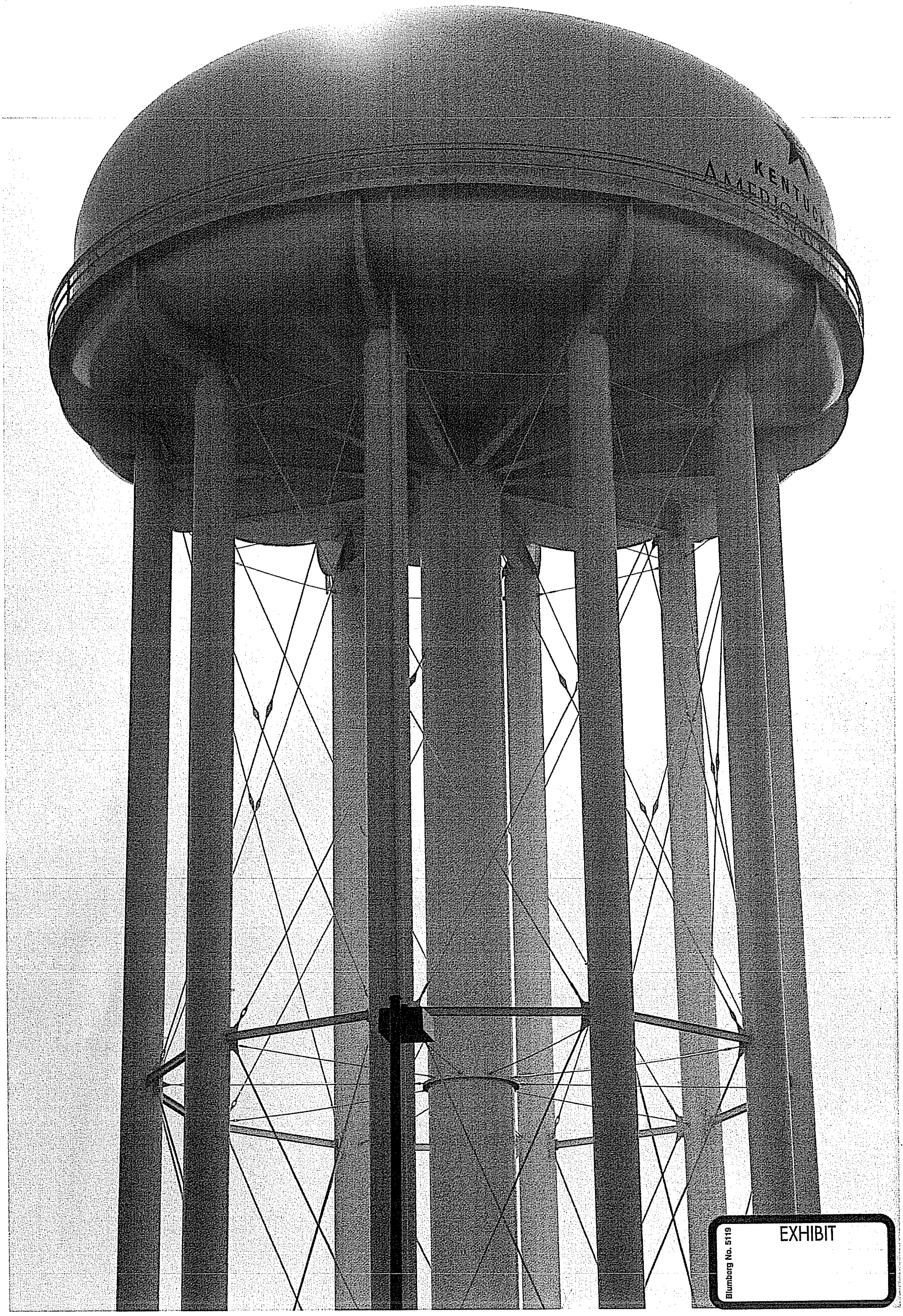


FOREST HILLS
EXHIBIT 23



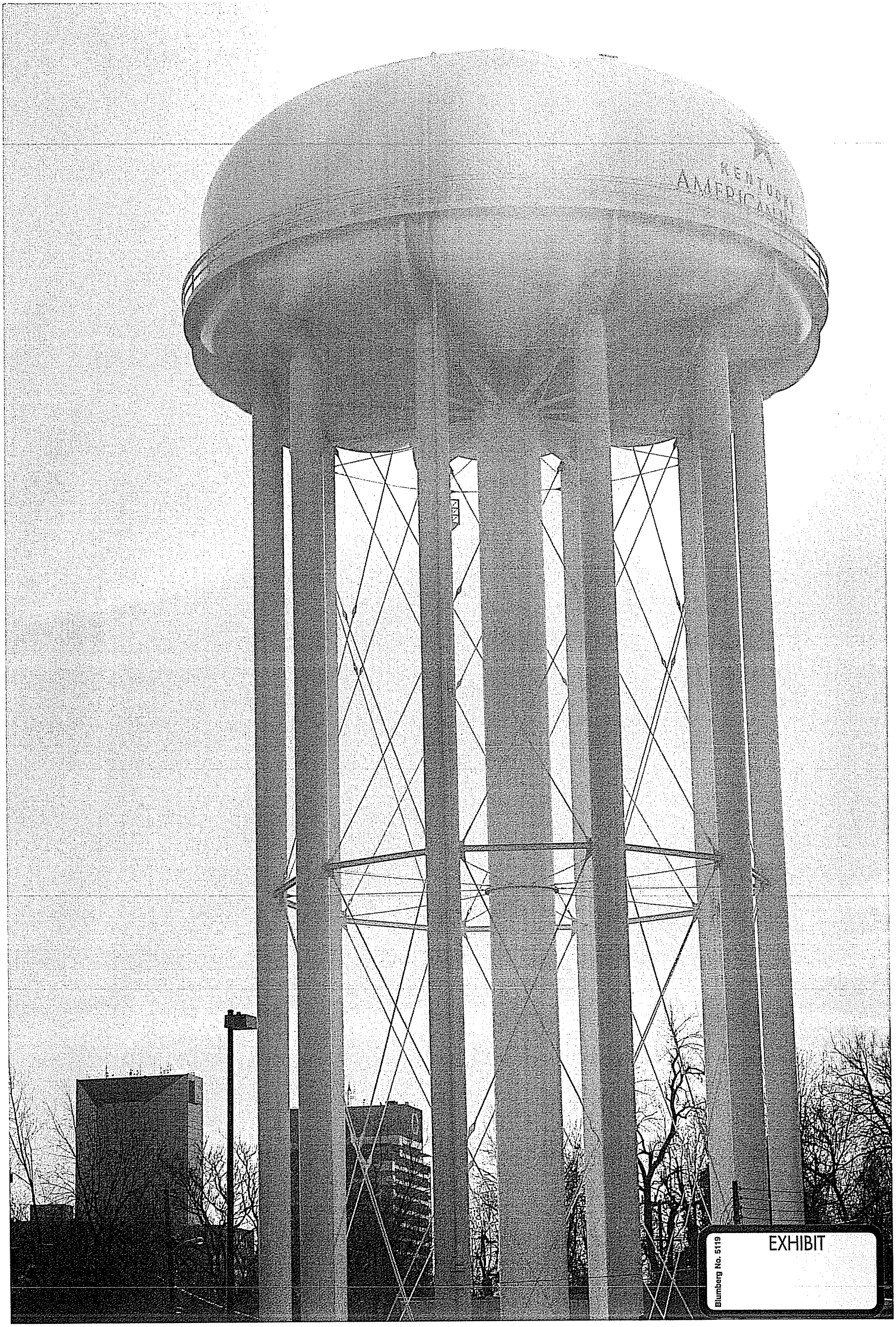
EXHIBIT

Blumberg No. 5119



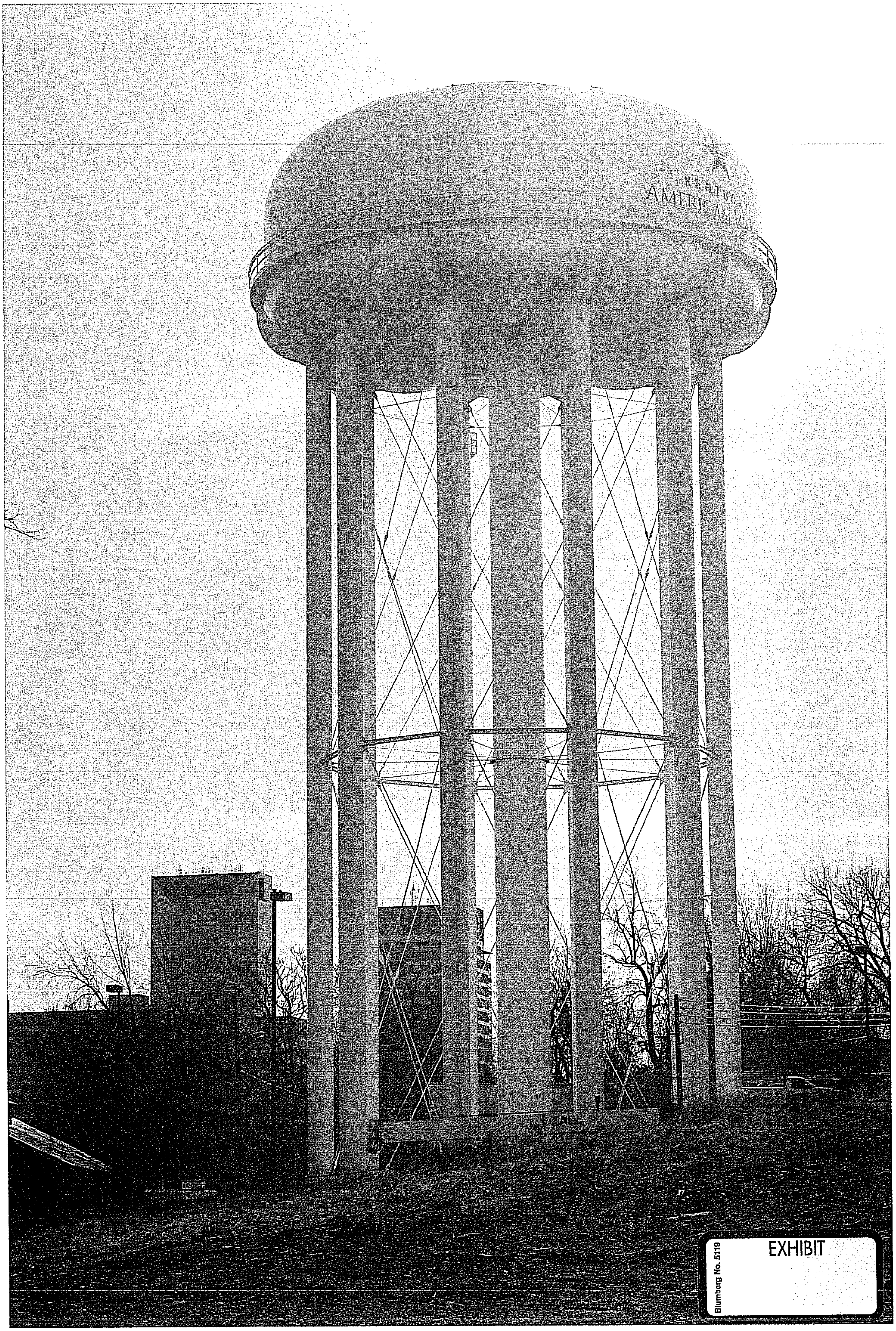
Blumberg No. 5119

EXHIBIT



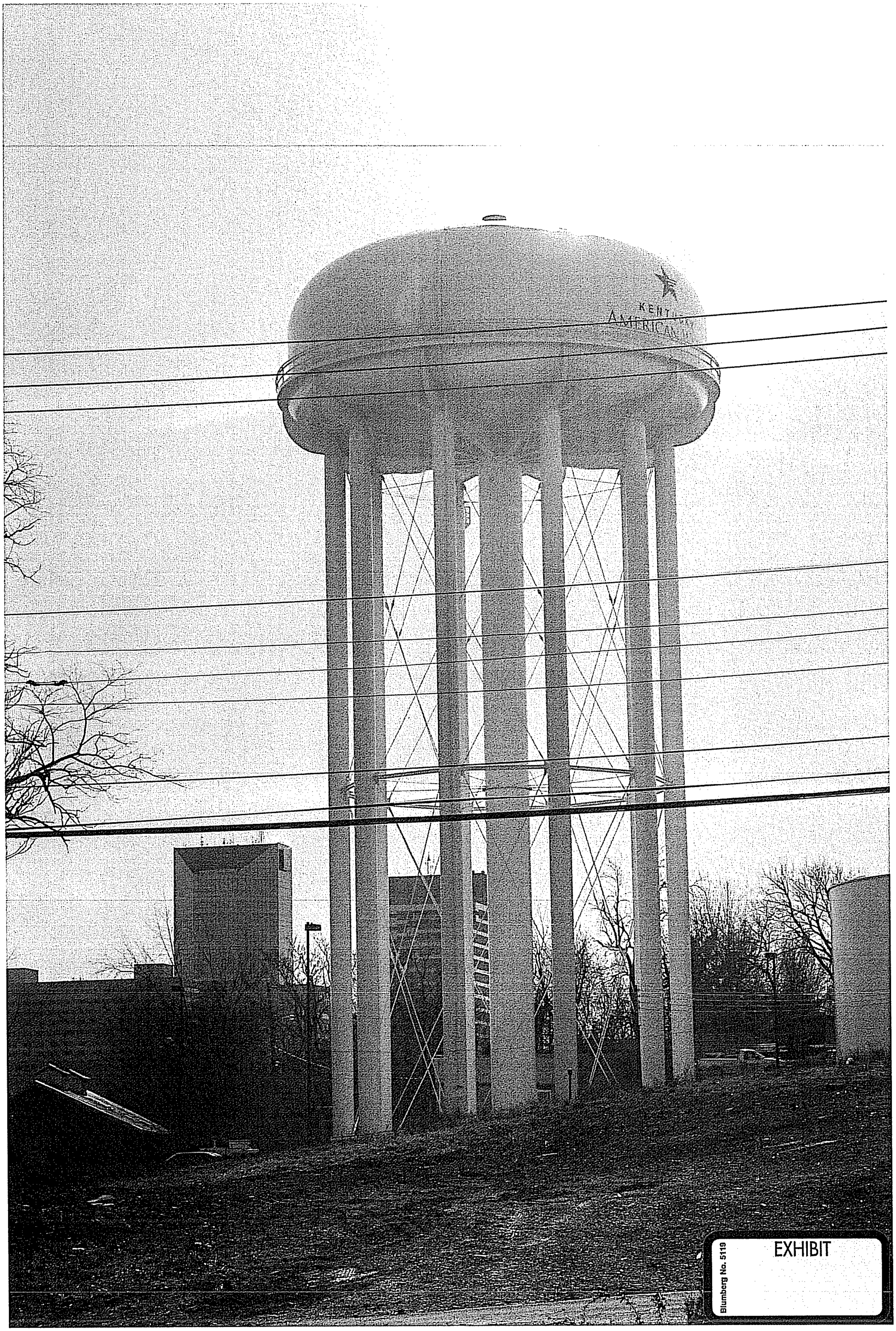
Blumberg No. 5119

EXHIBIT



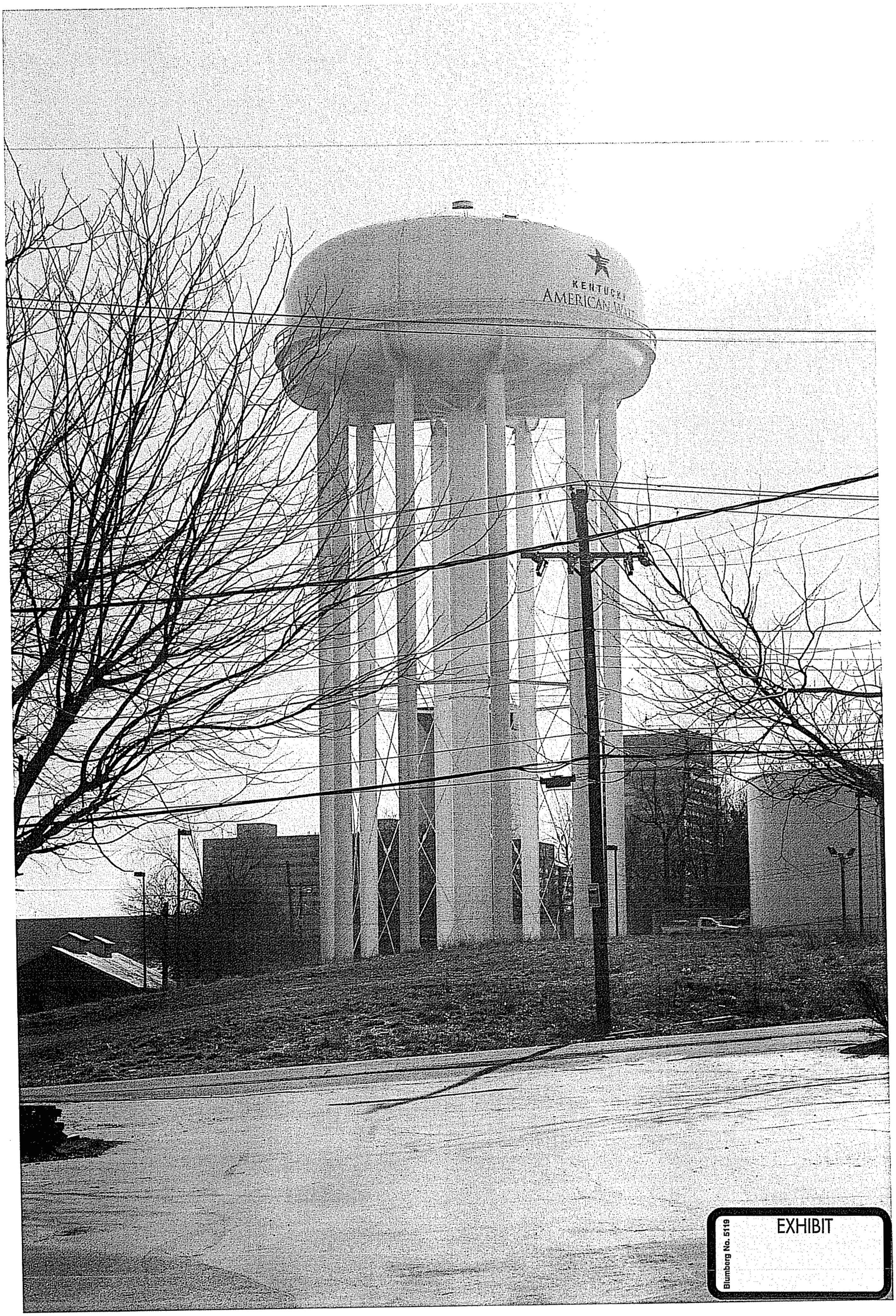
EXHIBIT

Blumberg No. 5119



EXHIBIT

Blumberg No. 5119



EXHIBIT

Blumberg No. 5119

Blumberg No. 5119

EXHIBIT 13

FOREST HILLS
EXHIBIT 24


HARRODSBURG

Revised: 01/07/2013
Created: 10/22/2004

G. MICHAEL RITCHIE, PE, PLS, PSM, CP
President | Chief Executive Officer
PHOTO SCIENCE

Mike Ritchie, PE, PLS, PSM, CP is **President** and **CEO** of Photo Science, a full-service *Geospatial Solutions* company headquartered in Lexington, Kentucky with branch offices in California, Colorado, Florida, Georgia, Kansas, Maryland, Michigan, and Pennsylvania.

Mr. Ritchie graduated from the University of Kentucky in 1972 with a Bachelors Degree in Civil Engineering. He has more than 40 years of experience in his field and currently holds professional engineering registrations in sixteen (16) states, is a licensed professional land surveyor in nine (9) states, and is a nationally recognized Certified Photogrammetrist. He has served as Project Manager for numerous state and local government engineering, surveying, mapping, and GIS projects, as well as for large federal geospatial data projects including projects for various U.S. Department of Defense agencies. He has spearheaded several computer application developments service the utility and GIS fields. Under his leadership, Photo Science has grown to nearly 200 staff, 13 aircraft, and several state-of-the-art digital sensors.

Mr. Ritchie is a past National President for MAPPS (Management Association for Private Photogrammetric Surveyors), KSPE (Kentucky Society of Professional Engineers), and KCEC (Kentucky Council of Engineering Companies), and for KEF (Kentucky Engineering Foundation). He is formerly a National Director of NSPE (National Society of Professional Engineers). He is a past National Chairman on COFPAES (Council On Federal Procurement of Architectural and Engineering Services), which represents the ACSM (American Congress on Surveying and Mapping), AIA (American Institute of Architects), ASCE (American Society of Civil Engineers), MAPPS, and NSPE. Mr. Ritchie has served as a National Director representing Kentucky to ACEC (American Council of Engineering Companies). In 1999, Mr. Ritchie was elected to the ACEC College of Fellows.

Mr. Ritchie has served on the NCEES (National Council of Examiners for Engineering and Surveying) Task Force on the model law revisions to the practice of land surveying and photogrammetry. In addition, he was completed a two-year term on the National Geospatial Advisory Committee for the U.S. Department of Interior to advise the Federal Government on use of Geospatial Technology. Currently, Mr. Ritchie serves on the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors.

Blumberg No. 5119
EXHIBIT
14

FOREST HILLS
EXHIBIT 25

FOREST HILLS

CONFIDENTIAL EXHIBIT (marker only)

Exhibit No. 26