

2018 Suburban Deer Management Program Summary Report

Princeton Township, New Jersey

by

White Buffalo, Inc.

26 March 2018

Site Description and Management History

Princeton Township contains a matrix of suburban/commercial development, agricultural fields, parks and open grasslands. As a result of limited legal hunting opportunities and good deer habitat, the deer population had increased to a level incompatible with some land uses and human activities. Although deer physical condition was not a primary issue, there was concern regarding numerous deer/vehicle collisions and damage to garden and landscape plantings.

Deer population reduction efforts were implemented in 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, and 2018 under the New Jersey Division of Fish and Wildlife community-based deer management program. Three hundred twenty-two, 303, 280, 276, 119, 151, 126, 107, 154, 148, 116, 159, 127, 250, 119, 63, and 196 deer were removed by lethal means during 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, and 2018, respectively.

Deer Management Program Overview

Pre-baiting was conducted from 26 January -14 February 2018. Deer removal activities began on 15 February 2018 and continued through 15 March 2018. During the 29-day removal period, 21 days of fieldwork were required to achieve the harvest of 196 deer (see Appendix A). No drop-nets were utilized during this year's program due to lack of access.

Field Methods

We followed the operations protocol outlined in the contract. Nineteen bait sites were selected throughout the area of operation. Sharpshooting sites were accessed from tree stands. Deer were shot on a first opportunity basis. This means that deer were shot only when, 1) a safe opportunity presented itself, and 2) maximal harvest efficiency

would be achieved. Carcasses were then tagged and transported for processing and data collection.

Harvest Demographics

We harvested 91 females (46%) and 105 males (54%). Seventy-four deer (38%) were yearling or older males, whereas 122 deer (62%) were “antlerless”. Thirty-one male fawns were included in the antlerless harvest.

The overall harvest demographics are summarized in Table 1. Sixty-three fawns (32%) and 133 (68%) adults were harvested. Table 2 shows comparative distribution of deer harvested during the last 17 years of management efforts.

Table 1. Age class and sex distribution of deer harvested in Princeton Township, NJ from 15 February – 15 March 2018.

AGE	MALE (%)	FEMALE (%)	COMBINED (%)
Fawn	31 (16%)	32 (16%)	63 (32%)
Adult	74 (38%)	59 (30%)	133 (68%)
Total	105 (54%)	91 (46%)	196 (100%)

Table 2. Comparative age class and sex distribution of deer harvested in Princeton Township, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, and 2018.

YEAR	Male Adult	Female Adult	Male Fawn	Female Fawn
2001	52 (16%)	139 (43%)	77 (24%)	54 (17%)
2002	63 (21%)	122 (40%)	84 (28%)	34 (11%)
2003	37 (13%)	103 (37%)	78 (28%)	62 (22%)
2004	39 (14%)	102 (37%)	85 (31%)	50 (18%)
2005	23 (19%)	40 (34%)	24 (20%)	32 (27%)
2006	47 (31%)	52 (34%)	29 (19%)	23 (15%)
2007	27 (21%)	43 (35%)	38 (30%)	18 (14%)
2008	40 (37%)	31 (29%)	19 (18%)	17 (16%)
2009	51 (33%)	48 (31%)	25 (16%)	30 (19%)
2010	54 (37%)	39 (26%)	28 (19%)	27 (18%)
2011	0	0	0	0
2012	40 (34%)	33 (29%)	24 (21%)	19 (16%)
2013	47 (30%)	60 (37%)	30 (19%)	22 (14%)
2014	47 (37%)	37 (29%)	21 (17%)	22 (17%)
2015	59 (23%)	104 (42%)	45 (18%)	42 (17%)
2016	38 (32%)	37 (31%)	28 (24%)	16 (13%)
2017	22 (35%)	19 (30%)	10 (16%)	12 (19%)
2018	74 (38%)	59 (30%)	31 (16%)	32 (16%)

Harvest by Deer Management Zone

To allow for a more comprehensive population management program, we summarized all the harvest data by management zone (Table 3). Zone 1 covered land west of Great Road, east of the Town line, south of Cherry Valley Road and north of Rosedale Road. Zone 2 was delineated on the north by Rosedale Road, the east by the old Borough of Princeton, and the south and west by old Township lines. Zone 3 was located to the east of Great Road, south of Cherry Valley Road, west of Route 206 and north of Mountain Avenue. Zone 4 included land east of Route 206, south of the Town line, west of the County line and north of Route 27. The harvest was nearly even across zones 1, 3 and 4 with 64, 58, and 99 deer harvested, respectively. Zone 2 only had two active sites which accounted for 15 deer. A comparison of harvest totals by zone over the seventeen year management program can be seen in Table 4.

Table 3. Age class and sex distribution of deer harvested by management zone in Princeton Township from 15 February – 15 March 2018.

ZONE 1 (n =64)

AGE	MALE		FEMALE	
	NUMBER	PERCENT	NUMBER	PERCENT
Fawn	12	19%	16	25%
Adult	16	25%	20	31%
Total	28	44%	36	56%

ZONE 2 (n =15)

AGE	MALE		FEMALE	
	NUMBER	PERCENT	NUMBER	PERCENT
Fawn	1	6%	0	0%
Adult	10	67%	4	27%
Total	11	73%	4	27%

ZONE 3 (n =58)

AGE	MALE		FEMALE	
	NUMBER	PERCENT	NUMBER	PERCENT
Fawn	10	17%	5	9
Adult	26	45%	17	29%
Total	36	62%	22	38%

ZONE 4 (n =59)

AGE	MALE		FEMALE	
	NUMBER	PERCENT	NUMBER	PERCENT
Fawn	8	14%	11	19%
Adult	22	37%	18	30%
Total	30	51%	29	49%

Table 4. Comparison of annual harvest by Zone for the years 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2012, 2013, 2014, 2015, 2016, 2017, and 2018.

Year	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
2001	72	74	61	115		322
2002	44	60	80	113	6	303
2003	38	42	69	131		280
2004	53	62	73	88		276
2005	30	18	21	50		119
2006	22	23	30	74		151
2007	38	28	24	36		126
2008	22	15	23	47		107
2009	50	17	46	41		154
2010	26	38	43	41		148
2011	0	0	0	0		0
2012	33	17	23	43		116
2013	58	22	25	54		159
2014	28	21	28	50		127
2015	65	21	44	120		250
2016	31	20	34	34		119
2017	17	13	14	19		63
2018	64	15	58	59		196

The pregnancy status of the female deer harvested is summarized in Table 5. Ninety-one females were sampled, including 32 fawns, and 53 (58%) were pregnant.

Table 5. Comparison of pregnancy status of female deer harvested in Princeton 2001 – 2010 and 2012 - 2018.

	TRIPLETS	TWINS	SINGLE	NOT PREGNANT
ADULT				
2018	3 (5%)	35 (59%)	12 (20%)	9 (15%)
2017	2 (10%)	13 (68%)	1 (5%)	3 (16%)
2016	1 (3%)	25 (67%)	4 (11%)	7 (19%)
2015	1 (1%)	59 (56%)	36 (35%)	8 (8%)
2014	-	29 (78%)	5 (14%)	3 (8%)
2013	5 (8%)	33 (55%)	14 (24%)	8 (13%)
2012	3 (9%)	25 (76%)	3 (9%)	2 (6%)
2010	2 (5%)	28 (72%)	5 (13%)	4 (10%)
2009	1 (2%)	34 (71%)	8 (17%)	5 (10%)
2008	5 (16%)	20 (65%)	4 (13%)	2 (6%)
2007	1 (2%)	24 (56%)	3 (7%)	15 (35%)
2006	3 (6%)	26 (50%)	13 (25%)	10 (19%)
2005	4 (10%)	23 (58%)	7 (18%)	4 (10%)
2004	1 (1%)	71(71%)	19 (19%)	1 (1%)
2003	6 (6%)	75 (73%)	12 (11%)	6 (6%)
2002	4 (3%)	93 (76%)	16 (13%)	4 (3%)
2001	-	101 (73%)	18 (13%)	-
FAWN				
2018	-	-	3 (9%)	29 (91%)
2017	-	2 (17%)		10 (83%)
2016	-	-	1 (6%)	15 (94%)
2015	-	-	2 (5%)	40 (95%)
2014	-	-	2 (9%)	20 (91%)
2013	-	1 (5%)	1 (5%)	20 (90%)
2012	-	1 (5%)	4 (21%)	14 (74%)
2010	-	-	4 (15%)	23 (85%)
2009	-	-	5 (17%)	25 (83%)
2008	-	2 (12%)	4 (23%)	11 (65%)
2007	-	2 (11%)	7 (39%)	9 (50%)
2006	-	1 (4%)	5 (22%)	17 (74%)
2005	-	1 (3%)	2 (6%)	29 (91%)
2004	-	-	2 (4%)	47 (96%)
2003	-	1 (2%)	10 (16%)	51(82%)
2002	-	-	6 (18%)	28 (82%)
2001	-	4 (7%)	1 (2%)	49 (91%)

Discussion

Of interest is the high percentage of adult males harvested again in 2018. This is a trend that has continued since 2015 when adult males accounted for 23% of the harvest. It is likely they were more susceptible to bait, than the does, due to their poor condition resulting from the stress of breeding. Harvest per site ranged from 1 to 22 deer. Twenty five percent of the sites had a harvest of 15 deer or greater. Deer physical condition was

similar to previous years. There was nothing remarkable to mention regarding pregnancy rates; they have been consistent for several years.

Stable weather conditions during the early phase of the program allowed for efficient removal efforts. During the latter phases of the program several strong Nor'easters caused interruptions in consistent baiting and delayed shooting activities. Baiting disruptions and heavy snowfalls resulted in lost efficiency as deer arrivals at bait sites became more erratic until weather conditions and bait timing normalized.

Integration of the new Animal Control Officer (ACO) resulted in the added expense of training new staff to program protocols and learning bait site locations. The ACO handled ~50 percent of the baiting duties and the majority of carcass transport for processing, duties which historically have been handled by previous ACO's.

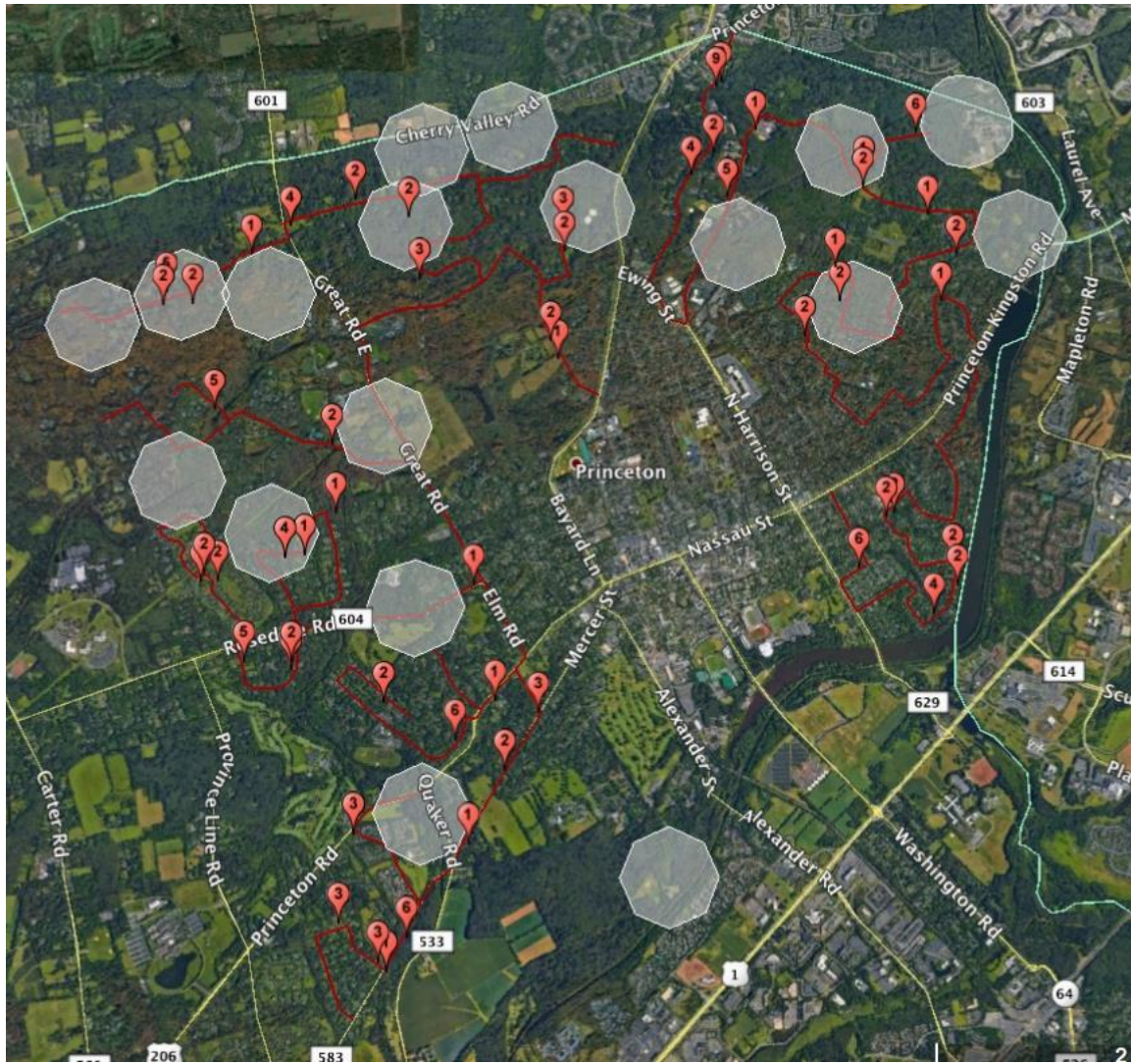
The deer population estimate conducted 15-18 March 2018 provided new insight into the deer population density and distribution within the municipality and specific localities where deer densities were problematic. Of particular concern is the old fertility control research area. This is the area generally defined by Carnegie Lake to the South and East, Terhune Road to the North and the Old Borough line to the West. Deer densities in these neighborhoods have risen significantly over the previous population estimate conducted in 2015. Particularly troubling is the lack of management options in these highly developed neighborhoods; nothing has changed since 2003 when the research was initiated. Interpretations on the legality of darting and retrieving deer in these neighborhoods for capture and sterilization or lethal removal changed in 2006, effectively removing this as a tool for management. Previous attempts at capturing deer in this area with drop-nets was largely unsuccessful. This leaves no effective management options in this area. It is likely the municipality will experience an increasing number of complaints from these neighborhoods without a solution for the residents. The only available option in this area is to push for legal change to allow darting and retrieval, as we did prior to 2006.

The law requiring written permission from residents 450' from shooting locations continues to limit access to some areas within the community. To better depict access in relation to deer observations, see Figure 1. Each pin in Figure 1 represents the number of deer observed in that specific location. The white shaded polygons represent the area affected by current sharpshooting access. Looking ahead, it is likely the use of drop-nets will have to be re-implemented to help address deer conflicts in areas where we cannot obtain all the permissions required to sharpshoot deer. This is a major undertaking which will require a substantial amount of effort.

Expanding the work window would benefit the deer management program. Permitting sharpshooting removal to take place during January and February, when food resources are most limited, would allow for greater bait acceptance. In addition, a longer permit timeframe would afford us additional flexibility to make adjustments in response to challenging weather events. Early green-up last year (2017), and several significant storms in 2018 resulted in a loss of numerous work days (and increased inefficiency), which impacted our ability to reach population target levels. Given the weather impacts over the past two years, the sharpshooting effort will need to be intensive next year to bring densities back down to acceptable levels.

Finally, getting the archery hunters into the parks as early as feasible will be beneficial. Archery harvest numbers are directly related to the number of hours in the field, so the more days they have available to hunt, the more deer they will likely harvest.

Figure 1. Princeton, NJ distance sampling observations 18 March 2018 compared to current sharpshooting access.



Acknowledgments

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Appendix A.

Township of Princeton – Deer Harvest by Date: 15 February – 15 March 2018

Date	Tag #	Location	Sex	Age	# Fetus
2/15/18	3001	Drakes Woodfield	F	A	2
2/15/18	3002	Drakes Woodfield	F	A	2
2/15/18	3003	Drakes Woodfield	M	Y	
2/15/18	3004	Drakes Woodfield	F	F	
2/15/18	3005	Drakes Woodfield	M	F	
2/15/18	3006	Drakes Woodfield	M	F	
2/15/18	3007	Drakes D&R	F	A	2
2/15/18	3008	Drakes D&R	F	F	
2/15/18	3009	Drakes D&R	F	F	
2/15/18	3010	Drakes D&R	F	F	
2/15/18	3011	Drakes D&R	M	Y	
2/15/18	3012	Drakes D&R	M	A	
2/15/18	3013	Drakes D&R	M	F	
2/15/18	3014	Cherry Valley East	F	A	1
2/15/18	3015	Quaker/206	M	F	
2/15/18	3016	Quaker/206	F	A	1
2/16/18	3017	Smoyer	F	A	2
2/16/18	3018	Smoyer	F	A	2
2/16/18	3019	Smoyer	F	Y	1
2/16/18	3020	Smoyer	F	F	
2/16/18	3021	Smoyer	M	F	
2/16/18	3022	Herrontown	F	A	0
2/16/18	3023	Herrontown	M	A	
2/16/18	3024	Herrontown	M	Y	
2/16/18	3025	Gulick	M	Y	
2/16/18	3026	Gulick	M	Y	
2/16/18	3027	Gulick	M	A	
2/16/18	3028	Gulick	M	A	
2/16/18	3029	Gulick	M	A	
2/16/18	3030	SOC	F	F	
2/16/18	3031	SOC	F	F	
2/16/18	3032	SOC	F	A	2
2/16/18	3033	SOC	M	A	
2/16/18	3034	SOC	M	Y	

2/16/18	3035	SOC	M	A	
2/17/18	3036	Ridgeview	M	A	
2/17/18	3037	Ridgeview	F	A	2
2/17/18	3038	Ridgeview	F	A	2
2/17/18	3039	Ridgeview	F	A	2
2/17/18	3040	Ridgeview	F	A	2
2/17/18	3041	Ridgeview	F	A	1
2/17/18	3042	Ridgeview	F	F	
2/17/18	3043	Cherry Valley West	M	A	
2/17/18	3044	Cherry Valley West	F	Y	2
2/17/18	3045	Cherry Valley West	F	A	2
2/17/18	3046	West Drive	M	A	
2/17/18	3047	West Drive	F	A	3
2/17/18	3048	West Drive	F	A	2
2/17/18	3049	West Drive	F	A	2
2/19/18	3050	Cherry Valley West	F	A	2
2/19/18	3051	Cherry Valley West	M	Y	
2/19/18	3052	Cherry Valley West	M	Y	
2/19/18	3053	Cherry Valley West	F	F	
2/19/18	3054	Cherry Valley West	F	F	
2/19/18	3055	Woodfield	F	A	1
2/19/18	3056	Woodfield	F	F	
2/19/18	3057	Woodfield	M	A	
2/19/18	3058	Woodfield	M	Y	
2/19/18	3059	Bunn	M	Y	
2/19/18	3060	Bunn	M	Y	
2/19/18	3061	Bunn	M	F	
2/19/18	3062	Bunn	M	F	
2/20/18	3063	Mountain Lakes	M	A	
2/20/18	3064	Mountain Lakes	M	A	
2/20/18	3065	Mountain Lakes	M	Y	
2/20/18	3066	Mountain Lakes	M	F	
2/20/18	3067	SOC	M	A	
2/20/18	3068	Mountain Lakes	M	F	
2/20/18	3069	Mountain Lakes	M	F	
2/20/18	3070	SOC	F	A	
2/20/18	3071	SOC	F	A	
2/21/18	3072	Farmview	F	A	0
2/21/18	3073	Farmview	F	A	2
2/21/18	3074	Farmview	F	A	2
2/21/18	3075	Farmview	F	A	2
2/21/18	3076	Farmview	F	A	2
2/21/18	3077	Farmview	F	F	
2/21/18	3078	Farmview	F	F	
2/21/18	3079	Farmview	M	F	

2/21/18	3080	Wendover	F	A	2
2/21/18	3081	Wendover	F	F	
2/22/18	3101	Smoyer	M	A	
2/22/18	3102	Smoyer	M	A	
2/22/18	3103	Smoyer	M	F	
2/22/18	3104	Smoyer	F	A	1
2/22/18	3105	Smoyer	F	F	1
2/22/18	3106	Smoyer	M	F	
2/22/18	3107	Ridgeview	F	A	1
2/22/18	3108	Ridgeview	F	A	2
2/23/18	3082	Cherry Valley West	F	A	2
2/23/18	3083	Cherry Valley West	M	F	
2/23/18	3084	Drakes Woodfield	M	A	
2/23/18	3085	Drakes Woodfield	M	A	
2/23/18	3086	SOC	F	A	3
2/23/18	3087	SOC	M	A	
2/23/18	3088	SOC	F	A	2
2/23/18	3089	SOC	M	F	
2/24/18	3090	Pretty Brook	F	A	2
2/24/18	3091	Pretty Brook	F	A	2
2/24/18	3092	Pretty Brook	F	F	
2/24/18	3093	Pretty Brook	M	A	
2/24/18	3094	Pretty Brook	M	A	
2/24/18	3095	Pretty Brook	M	A	
2/24/18	3096	206 H2O	M	A	
2/24/18	3097	206 H2O	M	A	
2/24/18	3098	206 H2O	M	A	
2/24/18	3099	206 H2O	M	A	
2/24/18	3100	206 H2O	M	F	
2/24/18	3197	206 H2O	M	F	
2/24/18	3198	206 H2O	F	A	2
2/24/18	3199	206 H2O	F	A	1
2/24/18	3200	206 H2O	M	F	
2/26/18	3109	Gulick	M	A	
2/26/18	3110	Gulick	M	A	
2/26/18	3111	Gulick	M	Y	
2/26/18	3112	Herrontown	M	F	
2/26/18	3113	Herrontown	F	F	
2/26/18	3114	Herrontown	F	A	2
2/26/18	3115	Herrontown	F	A	3
2/26/18	3116	Herrontown	F	F	
2/26/18	3117	Herrontown	F	F	
2/26/18	3118	Rosedale	F	A	1
2/26/18	3119	Rosedale	M	A	
2/27/18	3120	Mountain Lakes	M	A	
2/27/18	3121	Mountain Lakes	M	A	
2/27/18	3122	Mountain Lakes	M	A	

2/27/18	3123	Mountain Lakes	M	A	
2/27/18	3124	Mountain Lakes	M	Y	
2/27/18	3125	Mountain Lakes	M	A	
2/27/18	3126	Drakes D&R	F	A	1
2/27/18	3127	SOC	F	A	1
2/28/18	3128	Drakes Woodfield	M	A	
2/28/18	3129	Drakes Woodfield	M	F	
2/28/18	3130	Drakes Woodfield	M	A	
2/28/18	3131	Drakes Woodfield	M	A	
2/28/18	3132	Woodfield	M	A	
2/28/18	3133	Woodfield	M	F	
2/28/18	3134	Woodfield	F	A	2
2/28/18	3135	Woodfield	M	F	
2/28/18	3136	Bunn	F	F	
2/28/18	3137	Bunn	F	A	2
2/28/18	3138	Bunn	M	Y	
3/1/18	3139	Smoyer	M	A	
3/1/18	3140	Cherry Valley West	M	F	
3/1/18	3141	Ridgeview	M	F	
3/1/18	3142	Ridgeview	M	A	
3/1/18	3143	West Drive	M	A	
3/1/18	3144	West Drive	M	A	
3/5/18	3145	Pretty Brook	M	F	
3/5/18	3146	Pretty Brook	F	F	
3/5/18	3147	Pretty Brook	M	A	
3/5/18	3148	206 H20	F	F	
3/5/18	3149	206 H20	F	A	
3/6/18	3150	Cherry Valley West	M	Y	
3/6/18	3151	Cherry Valley West	F	F	
3/6/18	3152	Quaker/206	M	A	
3/6/18	3153	Quaker/206	M	A	
3/6/18	3154	Quaker/206	M	A	
3/6/18	3155	Quaker/206	M	A	
3/9/18	3156	Gulick	F	F	
3/10/18	3157	Mountain Lakes	M	A	
3/10/18	3158	Mountain Lakes	M	A	
3/10/18	3159	Farmview	F	A	2
3/10/18	3160	Farmview	F	A	2
3/10/18	3161	Farmview	F	F	
3/10/18	3162	Farmview	M	F	
3/10/18	3163	Farmview	M	F	
3/12/18	3167	Cherry Valley West	F	A	
3/12/18	3165	Cherry Valley West	M	F	2
3/12/18	3166	West Drive	M	A	
3/12/18	3167	West Drive	M	A	
3/12/18	3168	West Drive	M	A	
3/13/18	3169	SOC	F	A	

3/13/18	3170	Rosedale	F	A	
3/13/18	3171	Rosedale	F	A	
3/13/18	3172	Rosedale	F	F	
3/13/18	3173	Rosedale	F	F	
3/13/18	3174	Rosedale	F	F	
3/14/18	3175	Farmview	F	A	2
3/14/18	3176	Farmview	M	F	
3/14/18	3177	Pretty Brook	F	F	
3/14/18	3178	Pretty Brook	F	F	
3/14/18	3179	Pretty Brook	M	F	
3/14/18	3180	Mountain Lakes	M	A	
3/14/18	3181	Mountain Lakes	M	A	
3/14/18	3182	SOC	M	A	
3/14/18	3183	SOC	F	A	1
3/14/18	3184	SOC	F	F	1
3/14/18	3185	SOC	F	A	2
3/14/18	3186	SOC	F	F	1
3/14/18	3187	SOC	M	F	
3/15/18	3188	206 H2O	M	A	
3/15/18	3189	206 H2O	M	A	
3/15/18	3190	206 H2O	M	A	
3/15/18	3191	206 H2O	F	A	2
3/15/18	3192	SOC	F	A	2