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CALIFORNIA

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November 24, 2020

The Honorable Nury Martinez
President
Los Angeles City Council

c/o Holly L. Wolcott
City Clerk
City Hall Room 360

CITYWIDE CAT PROGRAM: RECOMMENDATIONS FOR CITY COUNCIL ACTION ON FINAL ENVIRONMENTAL IMPACT REPORT AND PROJECT APPROVALS (COUNCIL FILE 17-0413)

Dear President Martinez and Honorable Members:

The City received additional letters on the Citywide Cat Program (proposed Project) Environmental Impact Report (EIR) after the official comment period pursuant to the California Environmental Quality Act (CEQA). Although CEQA does not require the lead agency to respond to late-submitted letters, these letters were reviewed by City staff, and referenced in City staff's presentation to the Board of Animal Services Commissioners (the Board) on November 10, 2020, during its consideration of the EIR and proposed Project. The Board recommended approval of the EIR and proposed Project as set forth in its November 10, 2020, transmittal to the City Council.

RECOMMENDATION

The City is now transmitting the attached Technical Memorandums from its technical experts regarding the additional letters. City staff has reviewed the Technical Memorandums and concurs with the analysis, which confirms that the letters do not raise any substantial issues with the EIR's analysis and conclusions. Staff recommends that, after consideration of the attached, the City Council proceed with the recommendations set forth in the Board's November 10, 2020, transmittal to the City Council.

If you have any questions, please contact Maria Martin at (213) 485-5753.

Sincerely,

Electronically signed by
Mahmood Karimzadeh
for

Gary Lee Moore, PE, ENV SP
City Engineer

GLM/MK/mem

cc: Alfred Mata, Bureau of Engineering
Mahmood Karimzadeh, Bureau of Engineering
Maria Martin, Bureau of Engineering

Citywide Cat Program Final EIR – Urban Wildlands Group Technical Memorandum No. 1

This Technical Memorandum, prepared by ICF (see Draft Environmental Impact Report, Chapter 8 List of Preparers), responds to the assertions from Urban Wildlands Group and its model reviewers in the November 9, 2020, Urban Wildlands Group letter and attachment (UWG letter) addressed to Dr. Jan Green Rebstock of the City of Los Angeles, Bureau of Engineering regarding the Citywide Cat Program (proposed Project) Final Environmental Impact Report (Final EIR).

Executive Summary

1. The text describing the Final EIR model contains no major errors. The published paper on which the model is based contains an error which was reproduced by the Draft Environmental Report (DEIR) but corrected in the Final EIR.
2. The modelling approach DOES NOT preclude more free-roaming cats. Changes to free-roaming survival, reproduction, and sterilization rates or to transitions from other subpopulations to free-roaming can and do cause changes in free-roaming population, as can be seen in any of the modelled alternatives and in the sensitivity analysis.
3. The literature on owned cats is contradictory and no model can resolve these contradictions. Available evidence points to the owned cat subpopulation being proportional to the number of households, so the Final EIR models the owned cat subpopulation as proportional to the number of households. This change was made in the Final EIR in response to a comment from UWG; having said that the Draft EIR was unrealistic one way they are now saying the Final EIR is unrealistic the other way.
4. Some of the letter and attachment are recapitulations of comments previously received and addressed. One section refers to a part of the Final EIR where they made no prior comments on the Draft EIR. Many of the objections raised are to aspects of the model that were changed for the Final EIR specifically because of comments received by UWG on the Draft EIR.
5. The reviewers repeatedly describe the model, including many aspects of it that were unchanged between the Draft EIR and Final EIR. They also make misleading comparisons with published literature.
6. The Final EIR model, as well as the Final EIR's findings and conclusions, are therefore based on substantial evidence in the record.

The Model is Correct

Before addressing other issues, it is necessary to address claims that the model is incorrect, or that new errors were introduced into the model. As will be demonstrated below, there are no errors in the Final EIR model.

For the variables used in this section please see Final EIR Appendix J Table J-1 and section J.7 Equations 6–12.

Demography and Sterilization Equations

Appendix J contains a matrix representing the survival, reproduction, and sterilization of any feral cat subpopulation in the model. This matrix is denoted $\mathbf{B}_i$, with the i subscript being one of the four subpopulations. The value of this matrix was changed between the DEIR and the Final EIR because the version in the Draft EIR reproduced a typographical error in the cited paper, Flockhart and Coe (Flockhart and Coe, 2018).

Flockhart and Coe give two versions of $\mathbf{B}_i$, one in Equation 7 and one in Figure 1A (see Table 1). The reviewers assert that Figure 1A is the correct version of this matrix, but in fact neither is a correct representation of survival, reproduction, and sterilization. Equation 7 has transposed subscripts, and Figure 1A erroneously applies the juvenile sterilization proportion to the first two years of any cohort of cats, rather than just to the first year.

Table 1 Matrix representations of survival, reproduction, and sterilization from Flockhart and Coe, adapted to use the same notation as Appendix J.

Flockhart and Coe Equation 7 and DEIR	Flockhart and Coe Figure 1A
$\begin{bmatrix} \sqrt{s_J} f_J (1-p_J) & \sqrt{s_A} f_A (1-p_A) & 0 & 0 \\ s_J(1-p_J) & s_A(1-p_A) & 0 & 0 \\ \sqrt{s_J} f_J p_J & \sqrt{s_A} f_A p_A & 0 & 0 \\ s_J p_J & s_A p_A & s_{Jn} & s_{An} \end{bmatrix}$	$\begin{bmatrix} \sqrt{s_J} f_J (1-p_J) & \sqrt{s_A} f_A (1-p_J) & 0 & 0 \\ s_J(1-p_J) & s_A(1-p_A) & 0 & 0 \\ \sqrt{s_J} f_J p_J & \sqrt{s_A} f_A p_J & 0 & 0 \\ s_J p_J & s_A p_A & s_{Jn} & s_{An} \end{bmatrix}$

The correct form of the matrix is given in Appendix J Equation 10:

$$\mathbf{B}_i = \begin{bmatrix} \sqrt{s_J} f_J (1-p_J) & \sqrt{s_A} f_A (1-p_J) & 0 & 0 \\ s_J(1-p_A) & s_A(1-p_A) & 0 & 0 \\ \sqrt{s_J} f_J p_J & \sqrt{s_A} f_A p_J & 0 & 0 \\ s_J p_A & s_A p_A & s_{Jn} & s_{An} \end{bmatrix}.$$

The correct matrix differs from Flockhart and Coe Equation 7 by having the sterilization proportion terms p_J and p_A transposed across each quadrant's diagonal, and from Flockhart and Coe Figure 1A by having p_A instead of p_J in the first column of the second and fourth rows.

To see why Figure 1A is incorrect, it is necessary to trace the equations representing a cohort of cats through their first two years in the model.

1. Parent generation: The parent generation of this cohort consists of $n_{J,0}$ intact juveniles and $n_{A,0}$ intact adults; sterilized individuals cannot reproduce and therefore cannot be parents of the next cohort.
2. Reproduction: Because cats can reproduce more than once in a year, the model represents reproduction as occurring at a single point halfway through the year. Of the intact juveniles, proportionally $\sqrt{s_J}$ survive from the beginning of the year to the reproduction point; proportionally $\sqrt{s_A}$ intact adults survive. At this point, modelled reproduction occurs. For each surviving intact juvenile, f_J new juveniles are produced. For each surviving intact adult, f_A new juveniles are produced. Of these new juveniles, proportionally p_J are sterilized and the remaining $1 - p_J$ remain intact. This process of reproduction and the sterilization of new cats is represented by first and second cells in the first and third rows of the matrix: $\sqrt{s_J} f_J (1-p_J)$, $\sqrt{s_A} f_A (1-p_J)$, $\sqrt{s_J} f_J p_J$, and $\sqrt{s_A} f_A p_J$.

3. New cohort: The number of intact juveniles in the cohort is given by the expression $\left(\sqrt{s_J}f_J n_{J,0} + \sqrt{s_A}f_A n_{A,0}\right) \cdot (1 - p_J)$. Both the FINAL EIR and Flockhart & Coe Figure 1A treat sterilized cats identically so the number of sterilized cats need not concern us further.
4. Survival: Of the intact juveniles in this cohort, proportionally s_J survive to become adults. Following Figure 1A as recommended by the model reviewers requires that of these intact cats proportionally p_J should be sterilized and the remaining $1 - p_J$ should remain intact. This corresponds to the first cells in the second and fourth columns of the matrix; in Figure 1A, $s_J(1 - p_J)$ and $s_J p_J$. At this point, there are no juveniles remaining in the cohort and the number of intact adults is given by the expression $\left(\sqrt{s_J}f_J n_{J,0} + \sqrt{s_A}f_A n_{A,0}\right) \cdot \left(1 - p_J\right) \cdot s_J \cdot (1 - p_J)$; the number of newly sterilized adults is given by the expression $\left(\sqrt{s_J}f_J n_{J,0} + \sqrt{s_A}f_A n_{A,0}\right) \cdot \left(1 - p_J\right) \cdot s_J \cdot p_J$. This erroneously applies the juvenile sterilization rate twice to the same cohort. Because the "juvenile" age class in the model is defined as cats less than 1 year old, it is not appropriate to apply the juvenile sterilization proportion p_J a second time.

The Final EIR correctly applies the juvenile sterilization proportion once, and then the adult sterilization proportion subsequently. Using the correct Final EIR matrix, the number of intact adults in the cohort is given by the expression $\left(\sqrt{s_J}f_J n_J(0) + \sqrt{s_A}f_A n_A(0)\right) \cdot \left(1 - p_J\right) \cdot s_J \cdot (1 - p_A)$, correctly applying the juvenile sterilization rate once instead of twice.

Because neither matrix from Flockhart and Coe were correct, a different matrix was constructed that corrects the errors. The construction of this matrix is fully explained in Appendix J; since its correctness has been questioned, that explanation will be expanded to make absolutely clear that the construction is correct. The construction began by defining a matrix for survival and reproduction and a matrix for sterilization, then multiplying them together to produce a single matrix representing survival, reproduction, and sterilization.

The model represents the processes of survival and reproduction through survival and reproduction parameters, denoted s and f, respectively, which are used to construct a survival and reproduction matrix, denoted $\mathbf{D}_i$ in Appendix J. This is a block-diagonal matrix with intact fecundity and survival in the northwest quadrant of the matrix and sterilized fecundity (which is zero) and survival and in the southeast quadrant (Table 2). Compare either quadrant with the matrix elements in Andersen et al. (Andersen et al., 2004), which has reproduction in the top row and survival in the bottom row.

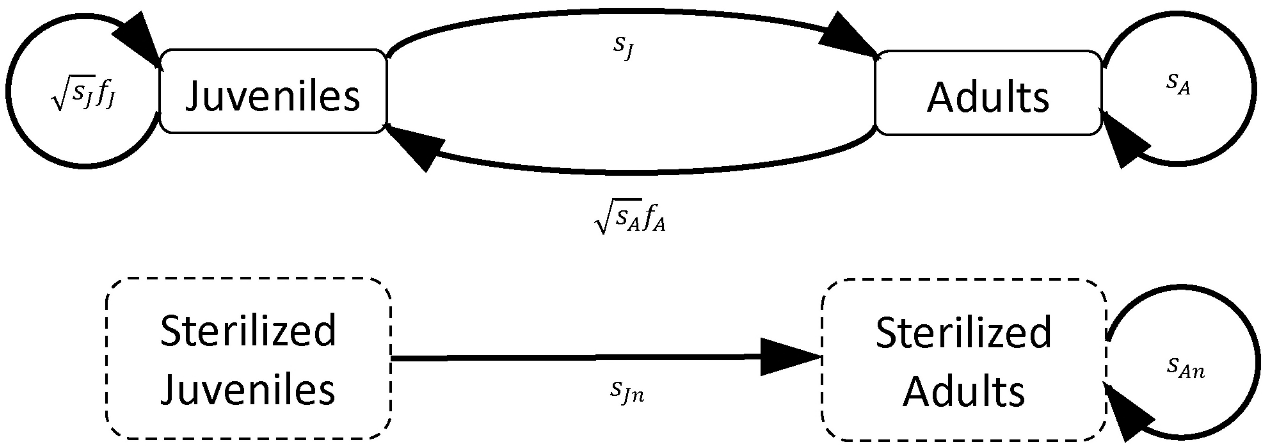
Table 2 R code used to construct the survival and reproduction matrix $\mathbf{D}_i$ and the corresponding formula for that matrix from Appendix J Equation 8.

<table>
<tr><th>R Code</th><th>Equation 8</th></tr>
<tr><td>
<pre>
juvenile.fecundity <- sqrt(juvenile.survival.intact) *
juvenile.fecundity
adult.fecundity <- sqrt(adult.survival.intact) *
adult.fecundity
matrix(c(
  # Row 1
  juvenile.fecundity,
  adult.fecundity,
  0, 0,
  # Row 2
  juvenile.survival.intact,
  adult.survival.intact,
  0, 0,
  # Row 3
</pre>
</td><td>$\mathbf{D}_i = \begin{bmatrix} \sqrt{s_J}f_J & \sqrt{s_A}f_A & 0 & 0 \\ s_J & s_A & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & s_{Jn} & s_{An} \end{bmatrix}$</td></tr>
</table>

`0, 0, 0, 0,`
`# Row 4`
`0, 0,`
`juvenile.survival.altered,`
`adult.survival.altered),`
`nrow = 4, ncol = 4, byrow = TRUE, dimnames = subpopu-`
`lation.dims)`	

This matrix may be better understood through a schematic. Figure 1 shows the four combinations of age class and reproductive status used in the model with an arrow showing the transitions between them represented in matrix $\mathbf{D}_i$. The first row of the matrix corresponds to the arrows from Juveniles to Juveniles and from Adults to Juveniles, representing the creation of new juveniles through reproduction. The second row of the matrix corresponds to the arrows from Juveniles to Adults and from Adults to Adults, representing the survival of those (intact) individuals into the next year. The third row of the matrix corresponds to the *lack of* arrows from to Sterilized Juveniles, representing the inability of sterilized individuals to reproduce. The fourth row of the matrix corresponds to the arrows from Sterilized Juveniles to Sterilized Adults and from Sterilized Adults to Sterilized results, representing the survival of those (sterilized) individuals into the next year.

Figure 1 Schematic of the matrix $\mathbf{D}_i$ representing survival and reproduction.



The model represents the process of sterilization through a sterilization proportion parameter, denoted p, which is used to construct a sterilization matrix, denoted $\mathbf{S}_i$, in Appendix J.

Table 3 R code used to construct the sterilization matrix $\mathbf{S}_i$ and the corresponding formula for that matrix from Appendix J Equation 9.

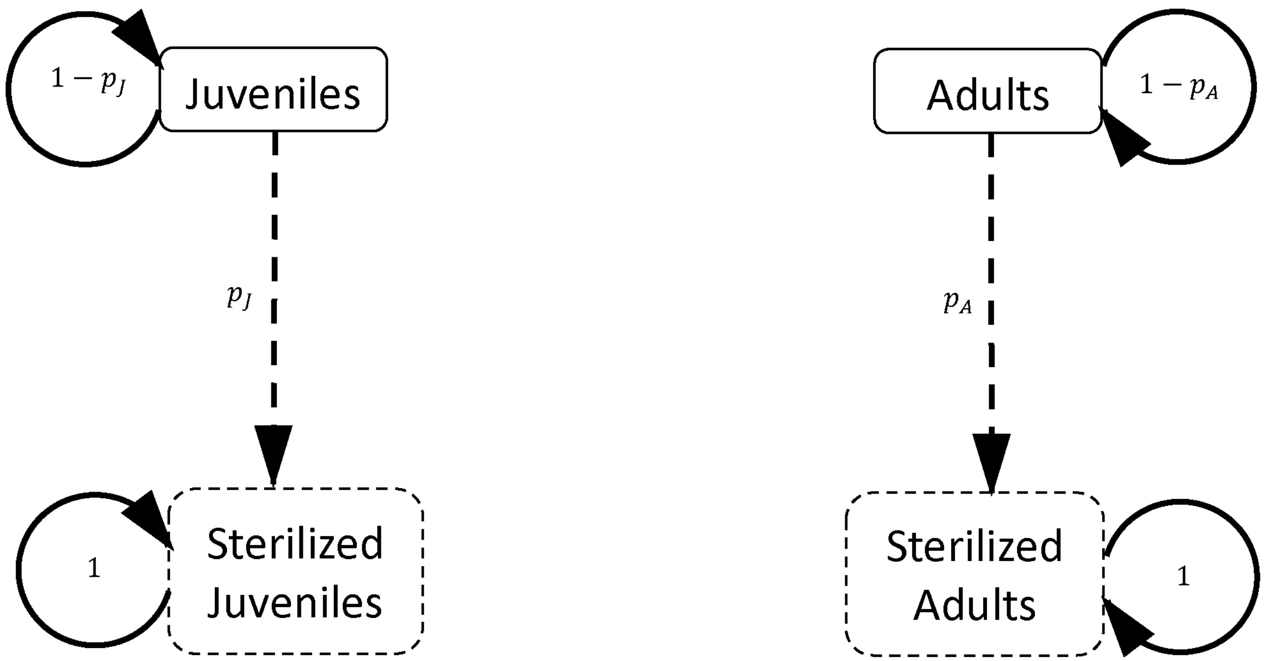
R Code	Equation 9

`matrix(c(`
`1 - juvenile.proportion, 0, 0, 0,`
`0, 1 - adult.proportion, 0, 0,`
`juvenile.proportion, 0, 1, 0,`
`0, adult.proportion, 0, 1),`
`nrow = 4, ncol = 4, byrow = TRUE, dimnames = subpopu-`
`lation.dims)`
	$\mathbf{S}_i = \begin{bmatrix} 1-p_J & 0 & 0 & 0 \\ 0 & 1-p_A & 0 & 0 \\ p_J & 0 & 1 & 0 \\ 0 & p_A & 0 & 1 \end{bmatrix}$

This matrix may be better understood through a schematic. It may also be explained easily in plain English: as shown in Figure 2, every year, proportionally p_J juveniles are sterilized and the remaining $1 - p_J$

remain intact; proportionally p_A adults are sterilized and the remaining $1 - p_A$ remain intact; and every sterilized individual remains sterilized.

Figure 2 Schematic of the matrix $\mathbf{S}_i$, representing sterilization.



The model represents the processes of survival, reproduction, and sterilization through the product of the sterilization matrix with the survival and reproduction matrix. Had the reviewers carefully analyzed survival/reproduction and sterilization in this way they would not have mistakenly proposed applying the juvenile sterilization rate two years in a row; defining a sterilization matrix separately and then multiplying it by a survival/reproduction matrix ensures that sterilization rates are applied the correct number of times. This matrix product is denoted $\mathbf{B}_i$ in Appendix J (Table 1).

Table 4 R code used to construct the survival, reproduction, and sterilization matrix $\mathbf{B}_i$ and the corresponding formula for that matrix from Appendix J Equation 10.

R Code	Equation 10
`sterilization.matrix %*% demography.matrix`	$\mathbf{B}_i = \mathbf{S}_i \times \mathbf{D}_i = \begin{bmatrix} \sqrt{s_J} f_J (1 - p_J) & \sqrt{s_A} f_A (1 - p_J) & 0 & 0 \\ s_J (1 - p_A) & s_A (1 - p_A) & 0 & 0 \\ \sqrt{s_J} f_J p_J & \sqrt{s_A} f_A p_J & 0 & 0 \\ s_J p_A & s_A p_A & s_{Jn} & s_{An} \end{bmatrix}$

Now that $\mathbf{S}_i$ and $\mathbf{D}_i$ have been defined, it is easy to see why Flockhart and Coe Equation 7 is incorrect. It is a hybrid of $\mathbf{S}_i \times \mathbf{D}_i$ and $\mathbf{D}_i \times \mathbf{S}_i$, taking elements of both (

Table 5). Equation 7 combines the sterilization/non-sterilization proportions from $\mathbf{D}_i \times \mathbf{S}_i$ with the non-zero third row of $\mathbf{S}_i \times \mathbf{D}_i$.

Table 5 Flockhart and Coe Equation 7 compared with the matrix product $\mathbf{D}_i \times \mathbf{S}_i$.

Flockhart and Coe Equation 7	$\mathbf{D}_i \times \mathbf{S}_i$
$\begin{bmatrix} \sqrt{s_J} f_J (1-p_J) & \sqrt{s_A} f_A (1-p_A) & 0 & 0 \\ s_J(1-p_J) & s_A(1-p_A) & 0 & 0 \\ \sqrt{s_J} f_J p_J & \sqrt{s_A} f_A p_A & 0 & 0 \\ s_J p_J & s_A p_A & s_{Jn} & s_{An} \end{bmatrix}$	$\begin{bmatrix} \sqrt{s_J} f_J (1-p_J) & \sqrt{s_A} f_A (1-p_A) & 0 & 0 \\ s_J(1-p_J) & s_A(1-p_A) & 0 & 0 \\ 0 & 0 & 0 & 0 \\ s_{Jn} p_J & s_{An} p_A & s_{Jn} & s_{An} \end{bmatrix}$

Subpopulation Transition Equations

The R code used for the Final EIR constructs the subpopulation transition in a straightforward way, by creating a 4×4 matrix representing transitions from every subpopulation into every other subpopulation or into itself (Table 6).

Table 6 R code representing subpopulations transitions and equivalent equation.

<table>
<tr><th>R Code</th><th>Equation</th></tr>
<tr><td>

```
subpopulations <- c("feral", "stray", "shelter",
"owned")
matrix. <- matrix(c(
  feral$to.feral, stray$to.feral, shelter$to.feral,
owned$to.feral,
  feral$to.stray, stray$to.stray, shelter$to.stray,
owned$to.stray,
  feral$to.shelter, stray$to.shelter, shelter$to.shel-
ter, owned$to.shelter,
  feral$to.owned, stray$to.owned, shelter$to.owned,
owned$to.owned),
  nrow = 4, ncol = 4, byrow = TRUE,
  dimnames = list(subpopulations, subpopulations))
```

</td><td>$\begin{bmatrix} p_{F\to F} & p_{S\to F} & p_{H\to F} & p_{O\to F} \\ p_{F\to S} & p_{S\to S} & p_{H\to S} & p_{O\to S} \\ p_{F\to H} & p_{S\to H} & p_{H\to H} & p_{O\to H} \\ p_{F\to O} & p_{S\to O} & p_{H\to O} & p_{O\to O} \end{bmatrix}$</td></tr>
</table>

where each $p_{X\to Y}$ is the proportion of cats that transition from subpopulation X to subpopulation Y in each year and each $p_{X\to X}$ is the proportion of cats that remain in subpopulation X in each year. The $p_{X\to X}$ terms are not input to the model but are instead defined as residuals of the transitions out of subpopulation X (Table 7).

Table 7 Definition of $p_{X\to X}$ terms as residuals of the transitions out of subpopulation X.

R Code	Equation
`feral$to.feral <- max(1 - feral$to.stray - fe-ral$to.shelter - feral$to.owned, 0)`	$p_{F\to F} = 1 - p_{F\to S} - p_{F\to H} - p_{F\to O}$
`stray$to.stray <- max(1 - stray$to.feral - stray$to.shelter - stray$to.owned, 0)`	$p_{S\to S} = 1 - p_{S\to F} - p_{S\to H} - p_{S\to O}$
`shelter$to.shelter <- max(1 - shelter$to.feral - shelter$to.stray - shelter$to.owned, 0)`	$p_{H\to H} = 1 - p_{H\to F} - p_{H\to S} - p_{H\to O}$
`owned$to.owned <- max(1 - owned$to.feral - owned$to.stray - owned$to.shelter, 0)`	$p_{O\to O} = 1 - p_{O\to F} - p_{O\to S} - p_{O\to H}$

Several of these subpopulation transitions are explicitly set to 0 in the R code, specifically $p_{F\to S}$, $p_{F\to O}$, and $p_{O\to F}$. Thus, after making the appropriate substitutions for each $p_{X\to X}$ and of the zeroes, the full version of the subpopulation transition matrix is

$$\begin{bmatrix} 1-p_{F\to H} & p_{S\to F} & p_{H\to F} & 0 \\ 0 & 1-p_{S\to F}-p_{S\to H}-p_{S\to O} & p_{H\to S} & p_{O\to S} \\ p_{F\to H} & p_{S\to H} & 1-p_{H\to F}-p_{H\to S}-p_{H\to O} & p_{O\to H} \\ 0 & p_{S\to O} & p_{H\to O} & 1-p_{O\to S}-p_{O\to H} \end{bmatrix}.$$

There are two differences between this matrix and the one published in Appendix J, but both are minor and neither had any material effect on the model:

1. Equation 12 should have had $p_{H\to F}$ instead of 0. Table J-14 row "To feral" does have a value for $p_{H\to F}$. Table J-14 is the section of the appendix that documents the values used in the code for transitions into and out of the shelter subpopulation, rather than merely listing variables as Equation 12 does. While the omission is regrettable, Table J-14 does accurately document the parameter values in the R code.
2. Since $p_{F\to S} = 0$, the first cell could have read $1 - p_{F\to H}$ instead of $1 - p_{F\to S} - p_{F\to H}$ because $1 - 0 - p_{F\to H} = 1 - p_{F\to H}$. However, the first cell in the second row of Equation 12 is correctly noted as 0 because $p_{F\to S} = 0$. (The unnecessary $p_{F\to S}$ term in Equation 12 was present in the DEIR Appendix but was not mentioned in any DEIR comments.) We regret the confusion.

In addition, Appendix J Footnote 15 should have been on $p_{S\to F}$, not $p_{F\to S}$. This footnote was misplaced in the DEIR Appendix but was not mentioned in any DEIR comments.

Bottom line: there is only one omission in this equation, p_{H-F}, representing the transition of 0.8 cats/year from the shelter to a feral subpopulation of over 300,000 cats. Because this transition rate is so small relative to the feral subpopulation, the omission—had it been present in the code—would have had no material effect on the model or its conclusion.

The reviewers incorrectly claim that in the R code all juvenile cats in the shelter subpopulation transition to the feral subpopulation. However, transitions out of the shelter subpopulation are not distinguished by age in the R code at all. This can be seen very clearly in the lines of code that implement the transition rate from shelter to feral and stray, which do not distinguish between age classes in any way.

```
# From shelter
number.free.roaming2shelter <- number.feral2shelter + number.stray2shelter
shelter2free.roaming <-  subset(transition.proportions,  from.subpopulation  ==  "shel-
ter")$to.free.roaming
proportion.feral.intakes <- number.feral2shelter / number.free.roaming2shelter
proportion.stray.intakes <- number.stray2shelter / number.free.roaming2shelter
shelter2feral <- proportion.feral.intakes * shelter2free.roaming
shelter2stray <- proportion.stray.intakes * shelter2free.roaming
```

Modeling Technique is Appropriate

Alleged "key conceptual errors" incorrectly describe the assumptions and behavior of the model.

Use of Carrying Capacity Model DOES NOT Preclude More Free-roaming Cats

Carrying Capacity

The section on "carrying capacity" partially recapitulate comments UWG-38 and UWG-39 identified in Chapter 2 of the Final EIR, and have been addressed in the response to those comments, the response to

CDFW-33, and in Final EIR Appendix J. Furthermore, UWG-38 and UWG-39 and the current letter contradict a comment by the technical reviewers submitted on the Draft EIR, which states that "A model at equilibrium would have all of the subpopulations stable and not rapidly increasing or decreasing. A useful model would be at equilibrium under the no-project condition, so that the changes of the project and the alternatives could be compared against the current steady state."

The reviewers dispute a citation used to support the equilibrium model approach in the Final EIR. Other literature supports the Final EIR, however: "Feral cat populations are extraordinarily capable of reaching local carrying capacities as a function of reproductive mechanisms that emphasize breeding efficiency" (Foley et al., 2005). The reviewers offer various citations and assertions but never address the justification made in Appendix J:

> Considering the survival and fecundity values in the model ..., a feral cat population with no resource constraints would have an exponential growth rate of 36% per year.

This is an extremely rapid rate of growth: at this rate, an initial population of just 1,000 cats would grow to over 500,000 in just 20 years. Los Angeles has been incorporated as a city for more than eight times that long. Given that long history of human habitation, a free-roaming cat population below the carrying capacity necessarily implies an even smaller population in the very recent past. That is, recently enough that even at the extremely rapid growth characteristic of feral cats there has not been sufficient time to reach equilibrium again.

We can see an example of a short term decline below equilibrium in the modelled results for Alternatives 2 and 3, where the successful prevention of all transitions from the owned to the stray subpopulation caused an abrupt 6.6% decline of the free-roaming subpopulation. This short-term reduction in cat abundance triggered rapid population growth that reversed almost all the decline within 5 years. The reviewers offer no evidence whatsoever that a recent population decline occurred among free-roaming cats in Los Angeles.

Perhaps the reviewers believe that there was no recent decline but instead that the free-roaming cat population has simply been increasing for some time (it is unclear which possibility they are arguing for). However, this is even more implausible. Consider Alternatives 2 and 3 again. After the initial decline, the fastest rate of growth was 8,739 cats/year, which can be taken as a reasonable example of how fast the free-roaming cat population might grow when it is somewhat density-constrained but still below carrying capacity. To believe that the free-roaming cat population is currently growing as fast as 8,739 cats/year is to make the implicit assumption that the total number of free-roaming cats in Los Angeles has been increasing so rapidly that there would have been no cats at all 39 years ago if that increase were a straight-line trend. This was obviously not the case. To put any trust in the idea that the free-roaming cat population is currently growing that fast, one would essentially need to also believe that Los Angeles had no free-roaming cats in the year 1980. This exact argument was made in a comment the model's technical review submitted on the Draft EIR about the owned cat subpopulation; the argument was correct there and it is correct here.

Furthermore, the reviewers' description of the model behavior and of its consequences is incorrect. The model does not assume, as the reviewers claim, that the number of free-roaming cats can never deviate from carrying capacity. Instead, it assumes that *given the best estimates of survival, fecundity, and sterilization and no interactions with other subpopulations* the free-roaming cat population will be at equilibrium when its population size equals the equilibrium abundance.

This is a subtle but significant difference from the reviewers' characterization of the model. Different values for survival, fecundity, or sterilization will lead to different equilibria. Indeed, if the spay-neuter rate of the free-roaming population were reduced, the population would have a higher equilibrium value—exactly the opposite of the reviewers' claim.

Equilibrium abundance is, to reiterate, defined *in the absence of interactions with other subpopulations*. A net transition of cats into the free-roaming subpopulation increases its abundance and a net transition out of the free-roaming subpopulation decreases it. The most obvious example of this is the modelled Alternatives 1, 2, and 3; in all three Alternatives, fewer cats transition from the owned subpopulation to the stray subpopulation. Although the free-roaming cat population does rebound, it stabilizes *at a lower level*. It is therefore not correct to say that transitions from the shelter to the free-roaming subpopulation cannot increase the modelled abundance, when it clearly does in the case of transitions from owned to free-roaming.

The stray subpopulation increasing due to transitions from other subpopulations is visible in the No Project scenario at a much smaller magnitude. As the owned subpopulation increases with the increasing number of households, the number of owned cats transitioning to the stray subpopulation increases, leading to a higher number of free-roaming cats. The reviewers explicitly refer to this increase in the stray population in section 4.2 but rather than recognizing that this completely disproves their claims in section 3.1 they simply assert that the results are nonsensical.

The reviewers' incorrect claim is also clearly rebutted by the sensitivity analysis. If their claim was correct, then the feral subpopulation would have zero sensitivity to every parameter except for feral equilibrium abundance. As Appendix J Table J-16 shows, this is not the case.

Bottom line: The reason why the release of cats to TNR groups in the proposed Project has little effect on the abundance is because fewer than 2,000 cats are being released relative to an estimated population of over 340,000, and because the releases are being paired with 10 sterilization surgeries for every 1 release. The number of releases relative to the number of sterilizations and the size of the free-roaming cat population is driving the modelled results, not that the model is "rigged" in any sense.

Feeding

The discussion of feeding partially recapitulates comments UWG-40, -42, -43, -44, -54, and -55 identified in the Final EIR and have been addressed in responses to those comments and in the Master Response The Proposed Project Does not Encourage Feeding.

To reiterate a key point from the Master Response: Increased feeding of free-roaming cats requires increased spending on food and increased participation by the public to distribute it. Thus, the proposed Project could only directly increase feeding if it subsidized the additional food and people. However, the only subsidy in the proposed Project is for sterilization. Therefore, the proposed Project does not directly increase feeding, and there is no substantive evidence in the record that would provide support to this supposition. Regarding indirect impacts, the City's public education and outreach campaign is intended to discourage new feeding by raising public awareness about the impacts of feeding on wildlife, habitat, and public health.

The reviewers suggest that the proposed Project should have an equilibrium abundance 50% higher than the No Project scenario. Numerically, this is an increase of 170,830 cats. Supplemental feeding of tens of thousands of cats is a significant economic expense. The reviewers do not explain how this significant expense might be paid when no aspect of the proposed Project pays those expenses, directly or indirectly.

Owned Equilibrium Abundance Is Necessary to Match Available Evidence

The owned equilibrium abundance parameter was added in response to comments UWG-57, and several comments raised by the technical reviewers of the Draft EIR model.

The owned equilibrium abundance parameter was most of all a response to a technical review comment:

> The model is not at equilibrium. A model at equilibrium would have all of the subpopulations stable and not rapidly increasing or decreasing. A useful model would be at equilibrium under the no-project condition, so that the changes of the project and the alternatives could be compared against the current steady state.

This is a useful critique and led to the inclusion of the owned equilibrium abundance parameter in the Final EIR. The exact request is in conflict with CEQA, as the no project condition should account for future changes such as population growth—indeed, including future human population growth was requested in UWG-60—and therefore cannot be a true equilibrium scenario. Other than the effect of future population growth on the owned cat population, the recommendation in the UWG Draft EIR model's technical review was implemented in the Final EIR. The Final EIR is now being criticized for following the recommendations in this comment.

The literature reviewed when constructing the model suggests an owned cat subpopulation that is growing slowly or not at all, as in the Final EIR model. The AVMA Demographic Sourcebook (AVMA, 2018) is consistent with a flat or even declining proportion of cat-owning households in California (Figure 3). The APPA National Pet Owners Survey 2017–2018 (APPA, 2018) reports a slight upward trend in proportion of cat-owning households nationally 1990–2016 (Figure 4) and a slight downward trend in the number of cats per household nationally (Figure 5). The Final EIR uses 1.9 cats/cat-owning household from the 2012 AVMA Demographic Sourcebook (AVMA, 2012), similar to but slightly lower than the numbers reported in the APPA survey.

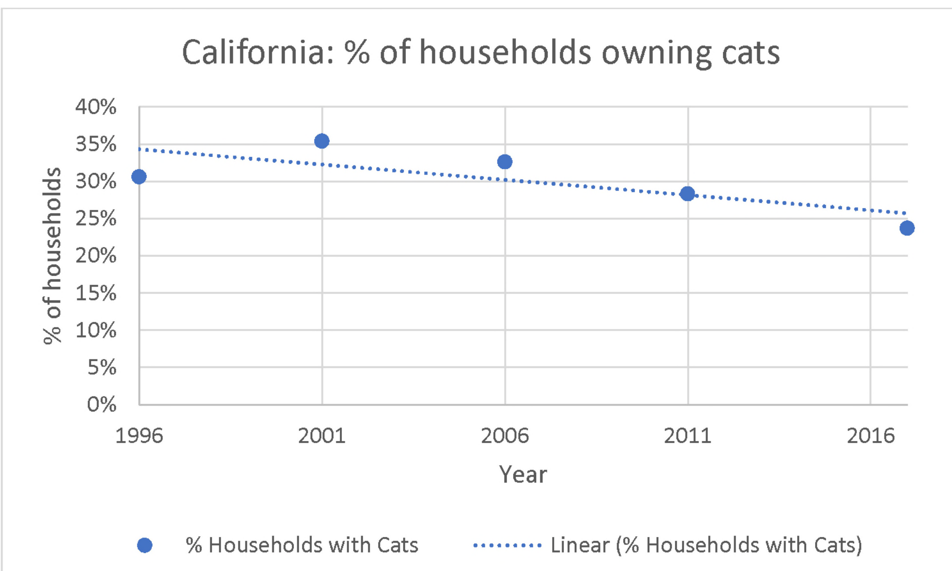


Figure 3 AVMA Demographic Sourcebook % of households in California that own cats.

Table 1: Trended Pet Ownership as a Percentage of U.S. Households

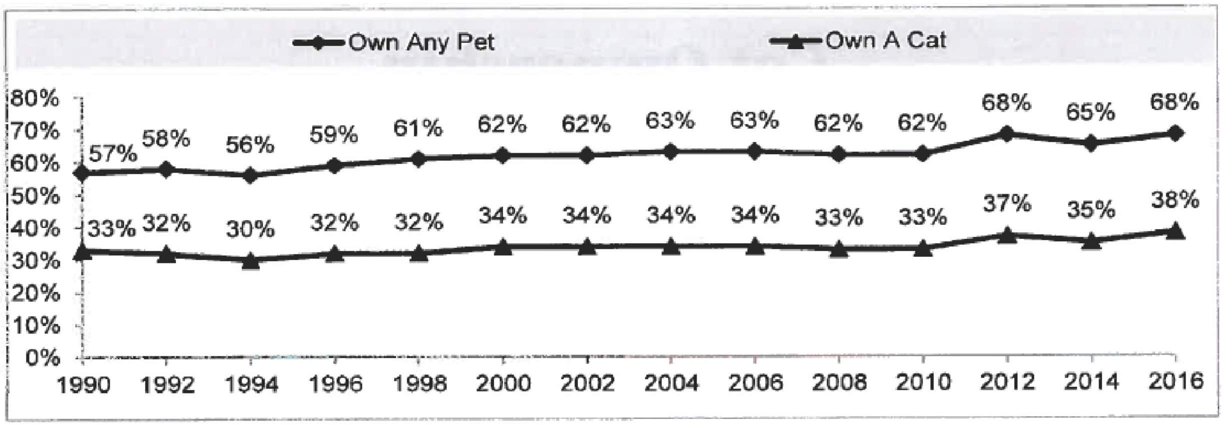


Figure 4 APPA National Pet Owners Survey % of households in the U.S. that own cats.

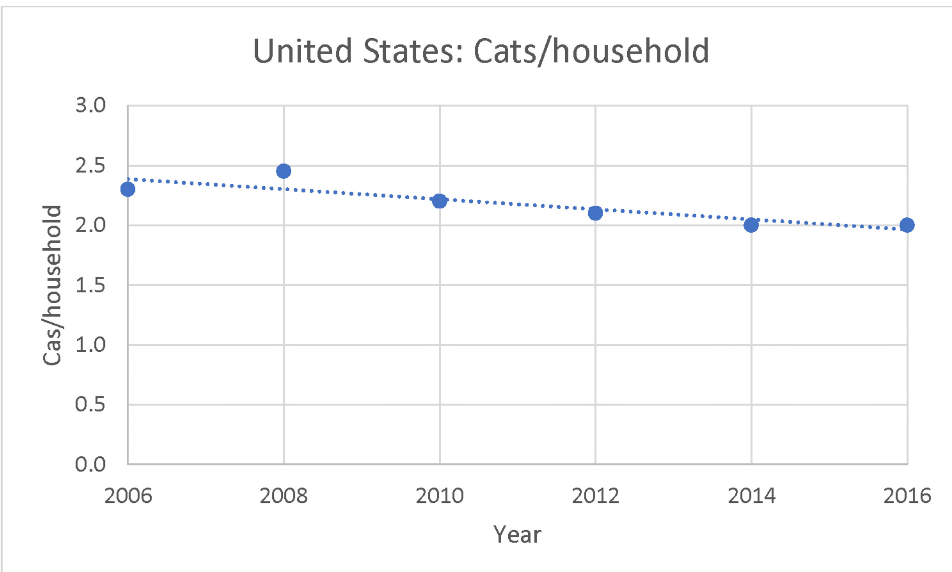


Figure 5 APPA National Pet Owners Survey cats/household in the United States.

These observations supporting a stable or a nearly stable owned cat population produce a paradox when compared to estimates of survival, reproduction, and sterilization available in the literature. This paradox is not something that can be resolved by this model or any model.

If a model accepts the best estimates of owned survival, fecundity, and sterilization, then the owned cat subpopulation must be increasing exponentially. This was the approach taken by the DEIR: to be realistic in terms of model inputs and accept that the owned cat subpopulation would have an implausible trajectory.

If a model accepts the available evidence that the owned cat subpopulation is stable or nearly stable, then the survival and/or fecundity values must be lower and/or the sterilization rate must be higher than the best available estimates. This was the approach taken by the Final EIR: to be realistic in terms of the owned subpopulation size (derived from our clearly defined and exhaustive literature search and review which has a greater effect on the model than the owned population vital rates anyway) and accept that survival would not match the literature.

Both approaches have now been criticized, but there is no third approach available. The reviewers' suggestion to "limit the number of cats that can transition into the owned population and assume that the excess remained either as strays or in shelters," does not address this paradox because it has no effect on the fecundity, survival, and sterilization values that underly the high intrinsic growth rate. A possible alternative would be to increase the transition rate out of the owned subpopulation, as this is the one model parameter for which there is the least direct evidence. However, large transitions from the highly sterilized owned subpopulation would increase the sterilization rate of free-roaming cats well beyond the 2.3% observed by Wallace and Levy (Wallace and Levy, 2006), contradicting yet another piece of available evidence.

The estimates used for survival, fecundity, and sterilization in the Final EIR were:

- Juvenile survival is 77.8% (Sparkes, 2006)
- Adult survival is 91.7% (New et al., 2004)
- Adult fecundity is 5.3 kittens/litter (New et al., 2004)
- Sterilization: 80% (Chu et al., 2009)

Considered on their own, the survival, fecundity, and sterilization parameters given here imply a rapidly increasing population. A matrix $\mathbf{B}_O$ representing the owned subpopulation has an eigenvalue of 1.45, corresponding to an explosive population growth of 45% per year—a population that will grow by a factor of almost 70,000 over 30 years. Flockhart and Coe use values of 70% and 80% survival for juveniles and adults and an owned fecundity of 3.8 (Flockhart and Coe, 2018), but even with these lower numbers the intrinsic growth rate of the population is still 16% per year—a population that will grow by a factor of 85 over 30 years. Even the lower values from Flockhart and Coe are incompatible with the observed values for the owned subpopulation reported by APPA and AVMA.

Any model that realistically contains a stable owned cat subpopulation necessarily must have lower survival (or lower fecundity, or higher sterilization) than reported in the literature. Lower fecundity is implausible because fecundity is probably the easiest parameter to measure directly. Higher sterilization is undesirable as well; owned sterilization in the Final EIR was based on Chu et al. following the recommendation in the Draft EIR model's technical review submitted by UWG.

In short, there is no modelling choice that can be made that completely resolves these contradictions. This can be the case in modeling when there is a dearth of location specific data, a situation in which models are most useful and commonly used. The reviewers have not provided any model parameters from a valid source that could produce an owned cat subpopulation that is at or near equilibrium.

Contrary claims that the dynamics of the owned cat subpopulation invalidate the model results, the sensitivity analysis shows that the model is not sensitive to the owned cat equilibrium abundance. A 5% decrease in the owned cat equilibrium abundance decreases the projected final free-roaming cat abundance by 469 cats—or about 0.16% of the projected final abundance of just under 300,000. In otherwords, a 1% change in owned abundance would lead to just a 0.03% change in final free-roaming cat abundance. The initial free-roaming cat abundance is even less sensitive to the owned equilibrium abundance. It is therefore very unlikely that any alternative approach would significantly change the model predictions or the conclusions. Indeed, the Draft EIR allowed for exponential growth of the owned cat subpopulation over 30 years and came to the same conclusion as the Final EIR.

Effect of Change in Cat Limit Is Unquantifiable

The section on the owned cat limit partially recapitulates comment UWG-57 identified in Chapter 2 of the Final EIR, which was addressed in the Master Response Updated Domestic Cat Population Modeling Based on Technical Changes.

The reviewers incorrectly state that "many more cats transition to the owned population under the project scenario than are currently adopted." As stated in Appendix J, the only subpopulation transition rate that differs between the No Project scenario and proposed Project is the transition from shelter to stray. In model year 30 the net transition from other subpopulations into the owned subpopulation is only 888 cats greater in the proposed Project than under the No Project. By contrast, the model parameters use 15,796 adoptions from the shelter as the baseline, and 888 is certainly not more than 15,796.

The reviewers are correct to argue that an increase in the owned cat subpopulation will lead to increased abandonment, loss, and relinquishment; indeed, the model explicitly accounts for this possibility by setting each of these parameters to be a constant proportion of the owned cat subpopulation. Appendix J also acknowledges that a likely but unquantifiable consequence of the owned cat limit is increased adoptions:

> It should be noted that the increase of the owned cat limit from three to five cats per household … is intended to encourage adoptions of these cats. Based on the literature review and research, no data were found to quantify the magnitude of this policy's effect on the adoption rate. Presumably, it would reduce the number of cats released to TNR groups because they would be adopted instead; however, without a basis to quantify this, it was not considered in the model, and all cats in the project were considered to be transferred to TNR groups.

As stated in the Master Response and in Appendix J, our literature review did not identify any values or range of values that could quantify how much the owned cat limit would change the size of the owned cat subpopulation, nor have the reviewers provided any actionable recommendations to quantify the effect of the owned cat limit.

Furthermore, explicitly modelling the owned cat limit with an increase in adoption essentially assumes away some of the direct impacts of the proposed Project through releases of cats to TNR groups. This might be a reasonable choice if there were any way to substantiate the effect of the owned cat limit on adoptions, but it is irresponsible when the effect size is essentially unknown. Given the number of households in the City, it is likely that even a modest effect size would create enough adoptions to eliminate the need for any releases to TNR groups at all. Had the EIR made this modelling choice, UWG would most likely criticize it heavily.

Implementing a Stochastic Model Would Not Change Conclusions

The section in the UWG letter on randomization partially recapitulates comment CDFW-33, and was addressed in the response to that comment, the Master Response CEQA Lead Agency Level of Effort, and in Final EIR Appendix J.

The reviewers erroneously state that "the model continues to present a single output as if it were the truth." This is not correct; Section J.12 of Final EIR Appendix J acknowledges uncertainty around this output several times, for example "extreme variation and the lack of data specific to Los Angeles itself introduce significant uncertainty into the absolute estimates of population size" and "the absolute numerical projections are uncertain." Indeed, the first sentence is quoted by the reviewers so they are certainly aware that the model *does not* present a single output as if it were the truth.

The reviewers' call for "Multiple model runs with random variation in the input variables" is insufficiently detailed to provide an adequate response. However, comment UWG-45 identified in Chapter 2 of the Final EIR suggests that the analytical approach is inappropriate for the CEQA framework where each alternative is compared to no Project.

> Another way to think about this issue is to ask what the margin of error is for the City's predictions. Are their estimates within 15% of the real numbers? Within 30%? If they are not within 13% of

> the actual numbers for all of the predicted future cat subpopulations, then the alleged decrease in stray and feral cats from the proposal project does not even fall outside the margin of error of the underlying estimates. Based on the expert review, it is impossible that the population predictions are accurate to within 13%, let alone 50%, so there is effectively no difference between the Project, No Project, or any of the alternatives that can be discerned from City's model.

The most straightforward interpretation of section 3.4 and comment UWG-45 taken together is that the stochastic model should randomly vary all the model parameters, and then construct confidence intervals around the estimates of free-roaming cat abundance. Such results would then be interpreted so that if the confidence interval for an alternative overlapped with the confidence interval for No Project that the alternative should be considered "effectively no differen[t]" from the No Project scenario. This approach is wrong in two ways.

First, the approach obscures more than it clarifies. We are fully in agreement with UWG-45 when it states that a stochastic model would lead to the conclusion that "there is effectively no difference between the Project, No Project, or any of the alternatives." This conclusion is not a useful one for decision makers and is a significant weakness of a stochastic model relative to a deterministic model in a situation such as this where there is large uncertainty about many model parameters. Furthermore, this finding of "effectively no difference" would also support the conclusion of less than significant impacts from the proposed Project.

Secondly, and worse, this approach is unsuitable for CEQA, where each alternative is compared to No Project. In the approach outlined in UWG-45, there is even more uncertainty around the difference between an alternative and no Project than there is around the abundance estimates. A more appropriate model design would be to randomize all the parameters in the model within a reasonable range of variation, then use the same randomly selected values to run *both* the alternative *and* the No Project scenario, repeating until there are many paired iterations of each alternative and No Project. Pairing each alternative with No Project in this way is essential for measuring the effect of this randomization on the difference in abundance between each alternative and No Project.

Using this paired approach, the abundances in each of the paired scenarios would tend to move together. This is because, as noted in Section J.12:

> With the exception of the offering of 20,000 spay/neuter vouchers per year and the annual release of approximately 2,000 cats/year to TNR groups (see Section J.9, Proposed Project), all model parameters are identical between the no project model and the proposed Project model. To the extent that the parameter values derived from the literature review differ from the existing conditions in the City, these errors are present in equal measure in both the no project model and the proposed Project model.

For example, if a higher feral survival is randomly selected, then both scenarios would have a higher modelled feral abundance. Likewise, if a lower feral survival is randomly selected than both scenarios would have a lower modelled feral abundance. The variation in the difference between scenarios would be due to a parameter increasing/decreasing one scenario more than it increased/decreased the other scenario. Consequently, the variation of the difference between each alternative and the No Project scenario—which is the key consideration for CEQA—would be much smaller than the range of variation around the abundance estimates. It is thus unlikely that a properly designed stochastic model would change the findings of the Final EIR.

Bottom line: the Final EIR acknowledges uncertainty but does not quantify it. Quantifying uncertainty could be useful but doing so is unlikely to change the findings.

Sensitivity Analysis Is Supported by Published Literature

The sensitivity analysis was criticized for examining sensitivity to a 5% change in parameter value. However, this has been used to analyzed the sensitivity of free-roaming cat populations in peer-reviewed literature, for example Miller et al. (Miller et al., 2014).

Model Outputs Are Reasonable

The reviewers criticize model characteristics that are the obvious and logical consequence of changing the number of households in Los Angeles based on future projects as recommended by UWG-60 identified in Chapter 2 of the Final EIR.

> The model does not behave in ways that suggest it is a reasonable approximation for reality. The owned subpopulation of cats is predicted to decline over the 30-year project period, from the initiation population of ~660,000 down to less than 650,000, even as the cat limit for owned cats will have been increased (Figure 2). This behavior of the model is likely attributable to a predicted decline in the number of households in Los Angeles County over the next 30 years, but it contradicts those at the City of Los Angeles expecting that an increase in the cat limit will result in more adoptions of cats.

The described behavior is directly caused by the projected decline in the number of households. Furthermore, the owned cat subpopulation declining along with the number of households is a perfectly reasonable prediction in line with current data for California. Figure 2 clearly shows the No Project scenario because it shows the feral subpopulation increasing at the same time that the owned and stray subpopulations are decreasing, so the owned cat limit would not have affected Figure 2 no matter how it was quantified; it thus has no bearing on the reasonableness of these predictions.

> The behavior of the free-roaming cat numbers in the project scenario do not make much sense either. The model predicts that the free-roaming cat numbers will decline by 40,000 in just five years, and then only decline slightly over the next 25 years (Figure 3).

In the first five years, 100,000 surgeries are performed. Because of the high fecundity of feral cats, this reduces the population by 40,000 cats—about 4 for every 10 surgeries performed. If not for the projected decline in households, the free-roaming cat population would reach a new equilibrium at this point. The model reaches new equilibria (loosely speaking) in the same time period in the modelled Alternatives 1, 2, 3, and 6. Nothing about this is surprising: a population with the intrinsic growth rate of feral cats should reach new equilibria quickly rather than slowly.

> The decline in free-roaming cats over the next 30 years in the no project scenario results from a projected decline in the number of households in Los Angeles over that period, which then is used to project a lower carrying capacity for free-roaming cats.

This is not correct; the change in the number of households has no effect whatsoever on the equilibrium abundance of free-roaming cats. As the number of households decrease, transition from owned to stray decreases, leading to a decrease in free-roaming cats.

> The trends for owned, shelter, and stray cats are so tightly tied to the projected number of households that they appear to have little to do with the functioning of the model. This results from the unreasonable assumptions that have been made about carrying capacity for both the free-roaming and owned populations.

But for the effect of households on owned cat abundance, the No Project scenario would be an equilibrium model, and the sizes of each of the 4 subpopulations would be exactly the same from year 0 to year

30—exactly as suggested in the Draft EIR model's technical review submitted by UWG. The only source of change in the No Project scenario is the number of households, so the trajectories of all four subpopulations track it. As the number of households increases, transition to the stray and shelter subpopulations increase and as the number of households decrease, transition to the stray and shelter subpopulations decrease. This criticism is taking a trivially explainable characteristic of the No Project scenario—that all parameters are constant except for number of households—and claiming that it makes no sense.

Model Predictions Are Consistent with Published Literature

The reviewers cite several papers allegedly showing that the sterilization rate achieved in the proposed Project is insufficient to drive a population reduction. The reviewers use the phrase "population reduction" in an ambiguous way that misleadingly implies a contradiction between these papers and the Final EIR where none exists.

For example: Andersen et al. concluded that "effective cat population control [requires] annual neutering of > 75% of the fertile population" (Andersen et al., 2004). They define "effective population control" in terms of "[t]he dominant eigenvalue of the population projection matrix, denoted by λ, [which] is the intrinsic or asymptotic growth rate of the population. If λ = 1 there is no net change in the population size. Values > 1 mean that the population is increasing; values < 1 mean that the population is decreasing." Andersen et al., unlike the Final EIR, is an exponential model which does not put a cap on the size of the modelled cat population. Instead, the population grows exponentially, and sterilization below the critical threshold of 75% never catches up (so to speak) with population growth—it slows but does not reverse the growth of the population. In terms of λ, a sterilization rate less than 75% does reduces λ but it does not reduce it below 1.

Because the Final EIR is not an exponential model, it is not directly comparable with Andersen et al. However, it could hypothetically be made comparable to Andersen et al. by setting the equilibrium abundance parameters to `Infinity` in the R code, thus turning into an exponential model. In this hypothetical exponential version of the Final EIR model, the proposed Project would reduce λ but would not reduce it below 1. There is therefore no contradiction between the Final EIR and Andersen et al.

The characterization of Foley et al. is similarly misleading. Foley et al. investigate the "Malthusian multiplier, R_m ... Management of feral cat R_m means getting a new value, R_m'. Population decline occurs when R_m' is < 1.0." Comparing this approach with Andersen et al., they note that "The matrix model forced λ < 1, analogously with the Ricker model forcing R_m < 1, for the population to decline." (Foley et al., 2005) There is thus no contradiction between the Final EIR and Foley et al., either, as the proposed Project quickly reaches a new equilibrium where $R_m = 1$--$R_m < 1$ for only a few years until the population transitions to its new equilibrium.

Foley et al. also use a different mechanism to limit the growth of the cat population: a Ricker model. Unlike the Final EIR model, the Ricker model used by Foley will always reach the same equilibrium abundance regardless of the survival and fecundity assumptions. Lower fecundity or survival or higher sterilization just mean that it takes fewer generations for a population to reach equilibrium, not that the equilibrium is lower as is the case in the Final EIR. Because of this characteristic of the Ricker model, the population can never decline unless $R_m < 1$. In this regard, the Final EIR is more like the Beverton–Holt model (Beverton and Holt, 1957), where changes in survival and fecundity can lead to lower or higher equilibrium abundance.

Verification of Matrix Algebra

The matrix algebra used to compute the products $\mathbf{S}_i \times \mathbf{D}_i$ and $\mathbf{D}_i \times \mathbf{S}_i$ was verified using the Maxima symbolic algebra system (wxMaxima).

```
(%i3) D:matrix(
        [sqrt(s_J)·f_J, sqrt(s_A)·f_A, 0, 0],
        [s_J, s_A, 0, 0],
        [0, 0, 0, 0],
        [0, 0, s_Jn, s_An]);
```

(%o3)
$$\begin{pmatrix} f_J\sqrt{s_J} & f_A\sqrt{s_A} & 0 & 0 \\ s_J & s_A & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & s_{Jn} & s_{An} \end{pmatrix}$$

```
(%i5) S:matrix(
        [1 - p_J, 0, 0, 0],
        [0, 1 - p_A, 0, 0],
        [p_J, 0, 1, 0],
        [0, p_A, 0, 1]);
```

(%o5)
$$\begin{pmatrix} 1-p_J & 0 & 0 & 0 \\ 0 & 1-p_A & 0 & 0 \\ p_J & 0 & 1 & 0 \\ 0 & p_A & 0 & 1 \end{pmatrix}$$

```
(%i6) B:S.D;
```

(%o6)
$$\begin{pmatrix} f_J\,(1-p_J)\sqrt{s_J} & f_A\,(1-p_J)\sqrt{s_A} & 0 & 0 \\ (1-p_A)\,s_J & (1-p_A)\,s_A & 0 & 0 \\ f_J\,p_J\sqrt{s_J} & f_A\,p_J\sqrt{s_A} & 0 & 0 \\ p_A\,s_J & p_A\,s_A & s_{Jn} & s_{An} \end{pmatrix}$$

(%i18) D.S;

(%o18)
$$\begin{pmatrix} f_J\,(1-p_J)\,\sqrt{s_J} & f_A\,(1-p_A)\,\sqrt{s_A} & 0 & 0 \\ (1-p_J)\,s_J & (1-p_A)\,s_A & 0 & 0 \\ 0 & 0 & 0 & 0 \\ p_J\,s_{Jn} & p_A\,s_{An} & s_{Jn} & s_{An} \end{pmatrix}$$

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Citywide Cat Program Final EIR Technical Memorandum No. 2

This technical memorandum, prepared by ICF (see Draft Environmental Impact Report, Chapter 8 List of Preparers), responds to assertions from reviewers in the following comment letters submitted to Dr. Jan Green Rebstock of the City of Los Angeles, Bureau of Engineering regarding the Citywide Cat Program (proposed Project) Final Environmental Impact Report (Final EIR).

- California Department of Fish and Wildlife (CDFW), dated November 6, 2020
- People for the Ethical Treatment of Animals (PETA), dated November 6, 2020
- Babak Naficy, dated November 9, 2020

California Department of Fish and Wildlife

The environmental impacts from trap and return activities are discussed in Section 4.2.2. of the Draft EIR. The analysis concludes that environmental impacts from the proposed Project would be less than significant. As noted by the commenter, there is also updated specific guidance for TNR practitioners regarding existing best practices typically used in existing TNR activities to avoid undisturbed areas and vegetation while trapping. Please see Section 3.2.3 of the Final EIR. The proposed Project seeks to facilitate sterilization of free-roaming cats currently existing in the environment by issuing sterilization vouchers to spay/neuter existing free-roaming cats within the City. As seen in Table 4.1-2 of the Final EIR, a majority of the existing free-roaming cat population is estimated to occur in developed urban/suburban areas (332,991 of the total estimated 341,661 cats) and thus it is anticipated that the majority of trapping activities would occur in these areas. Trapping only occurs in location where free-roaming cats already exist. While trapping bait may lure an existing free-roaming cat already in the area into a trap, because the trap and bait are soon removed from a given trapping location, it is not expected that trapping under the Project could lure free-roaming cats into certain areas like ESAs, as free-roaming cats already exist throughout the City, including in ESAs, and primarily in the urban/suburban areas of the City. TNR under the Project would not increase the likelihood of a free-roaming cat living in or near an ESA. If TNR activity is occurring in or near an ESA, it is because there are already free-roaming cats inhabiting that area, and TNR practitioners are attempting to trap and sterilize them.

The City is happy to partner with the CDFW to expand the capacity of the City's proposed Working Cat Program to provide spaces as needed for cats trapped in or near ESAs. In addition, the City would be pleased to partner with CDFW, if there is interest, in developing a guidance document of "what to look for and avoid when trapping near ESAs" to share with TNR organizations who offer training and create training videos.

Please note that the Draft EIR program implementation guidelines presented in Section 2.5.2 of the Draft EIR were included to address existing impacts from the free-roaming cat population (as described in Sections 4.2.2.9, 4.3.2.4, and 4.4.2 of the Draft EIR), and to establish best practices to further protect the health, safety, and welfare of wildlife and people when implementing the CCP – the CEQA impact analysis and determinations in the Draft EIR do not rely on inclusion of the program implementation guidelines in the Project. The proposed Project includes revised program implementation guidelines to clarify that they address only Project activities and not existing conditions (see Section 3.2.3 of the Final EIR). Please also see Master Responses *Revised Guidelines – 1- Mile Buffer around ESAs, Enforceability of Program Implementation Guidelines*, and *Revised Program Implementation Guidelines.* Through analysis presented in Chapters 3 and 4 of the Draft EIR, the City concluded that the proposed Project would not result in any significant impacts under CEQA and therefore mitigation measures are not required. Please see Master Response *Mitigation Measures Are Not Required* for a detailed response regarding the impact analysis and conclusions presented in the EIR. The proposed Project does not include feeding free-roaming cats or encourage the feeding of free-roaming cats, please see Master Response *The Proposed Project Does Not Encourage Feeding*. Please also see responses to comments CDFW-10 and CDFW-11 included in the Final EIR.

The City's map of Environmentally Sensitive Areas (ESAs) included in the Final EIR is based on substantial evidence and represents a good faith effort by the City to accurately identify ESAs in the City to inform the baseline conditions and environmental analysis presented in the Draft EIR and Final EIR. The City will engage the public to help raise awareness of the presence of ESAs throughout the City, and share information on the biodiversity of LA, the City's biological resources and sensitive habitat, as noted in Master Response *Public Education and Outreach.* The City would also be happy to partner with CDFW to increase public awareness about ESAs within the City. In addition, please see Master Response *CEQA Lead Agency Level of Effort* for other recommendations related to the mapping of ESAs. It should be noted that because ESAs are not a project element and the ESA map did not affect any significance conclusions, the ESAs included in the map is not an issue.

Monitoring and tracking suggestions were raised by CDFW in their comment letter` to the Draft EIR and has been responded to in the Final EIR; please see response to comment CDFW-35. Also note that no mitigation is necessary and therefore no monitoring/tracking is required to be conducted. Please see Master Response *Mitigation Measures Are Not Required*. The City is happy to partner with CDFW to help identify resources and share information if CDFW would like to collect trapping data and document the existing presence of free-roaming cats in and near ESAs.

People for the Ethical Treatment of Animals (PETA)

The baseline conditions and proposed Project effects on public health, biological resources, water resources, and the environment were analyzed in detail in Chapters 3 and 4 of the Draft EIR. The Draft EIR and Final EIR provide thorough analyses of these resource and potential project-related effects and these analyses are supported by substantial evidence in the record, including but not limited to the Draft EIR and Final EIR sections and Master Responses in the Final EIR; accordingly, after considering the information provided in this comment, the City has determined that its analysis was appropriate. Through analysis presented in Chapters 3 and 4 of the Draft EIR, the City concluded that the proposed Project would not result in any significant impacts under CEQA and therefore mitigation measures are not required. Please see Master Response *Mitigation Measures Are Not Required* for a detailed response regarding the impact analysis and conclusions presented in the EIR. The proposed Project does not include feeding free-roaming cats or encourage feeding of free-roaming cats, please see Master Response *The Proposed Project Does Not Encourage Feeding*. Please also see Chapter 4 of the Draft EIR and Master Responses *Domestic Cat Population Modeling and Environmental Impacts Analysis* and *Consideration of Public Health Impacts under the Proposed Project.*

The removal of ESA buffer restrictions and updated Program Implementation Guidelines are discussed in the following Master Responses: *Revised Program Implementation Guidelines* and *Revised Guidelines – 1-Mile Buffer around ESAs,* and *Enforceability of Program Implementation Guidelines*. The updated Program Implementation Guidelines have been developed to ensure best practices are employed while conducting TNR activities, which includes considerations of ESAs. The proposed Project does not encourage abandonment of cats. Note that the proposed Project objectives and components do not include the release of cats to "cat colonies" but rather involves provision of vouchers for existing free-roaming cats to be sterilized and returned after sterilization to the location where they were initially found. Please see the Project Description in Chapter 2 of the Draft EIR with any updates made in Section 3.2.3 of the Final EIR. Please also see Master Responses *Removal of Nuisance Cats*, *The Proposed Project Does Not Encourage Feeding*, and *Public Education and Outreach*.

With respect to changes made to the Draft EIR, please see Chapter 3 of the Final EIR. This chapter includes modifications to the Draft EIR for the proposed Project, and are intended to provide clarity, refinement, or supplemental information related to the proposed Project and/or Draft EIR, based upon comments received from agencies and/or interested parties/public. None of the corrections and/or modifications to the Draft EIR constitute significant new information or changes to the analysis or conclusions originally contained in the Draft EIR; therefore, they do not require recirculation of the Draft EIR, per Section 15088.5 of the California Environmental Quality Act (CEQA) Guidelines.

Free-roaming cat population estimates were refined in the Final EIR based on comments and input received on the Draft EIR. Please refer to Master Response *Updated Domestic Cat Population Modeling Based on Technical Changes* which provides detailed information on these changes and why they were made. With respect to the equilibrium abundance, available evidence supports an owned cat population that is at or near equilibrium, just as described in the Final EIR model – see updated Appendix J of the Final EIR for details regarding equilibrium abundance, as well as the Citywide Cat Program Final EIR - Urban Wildlands Group-Technical Memorandum No. 1 (dated November 24, 2020).

As part of the proposed Project, the City intends to fund 20,000 spay/neuter surgeries annually for free-roaming cats. The Project does not include any changes to required sterilization of owned cats. The City intends to maintain existing funding levels for pet cat sterilizations. With respect to the issue raised on closure of two Los Angeles animal shelters, please see footnote 5 added to Chapter 3 of the Final EIR; it reflects an update to Section 2.2 of the Draft EIR. Please note that if the proposed Project was approved, existing funding for spay/neuter of pet cats would be maintained and not diverted. Please see Section 2.5.1 in the Draft EIR regarding how the TNR voucher program would be implemented through LAAS in collaboration with service providers, individuals, and third-party organizations. Please see Master Response *This Is a Legal Issue, Not a CEQA Issue* regarding proposed Project funding. Notwithstanding, the CEQA analysis analyzed the Project as proposed and based on assumed Project funding and not based on other activities that may or may not occur or be necessary in the future. Additionally, proposed Project funding is not a CEQA issue that would result in physical impacts. If the Project is not funded, the Project will not occur, and existing conditions would remain. The City continues to support responsible pet ownership by requiring all owned cats be spayed or neutered and offering vouchers for free pet sterilizations in low-income neighborhoods.

For responses to the previously submitted comment letter by PETA on the Draft EIR, please see responses PE-1 through PE-65 in Chapter 2 of the Final EIR.

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With respect to changes made to the Draft EIR, please see Chapter 3 of the Final EIR. This chapter includes modifications to the Draft EIR for the proposed Project, and are intended to provide clarity, refinement, or supplemental information related to the proposed Project and/or Draft EIR, based upon comments received from agencies and/or interested parties/public. None of the corrections and/or modifications to the Draft EIR constitute significant new information or changes to the analysis or conclusions originally contained in the Draft EIR; therefore, they do not require recirculation of the Draft EIR, per Section 15088.5 of the California Environmental Quality Act (CEQA) Guidelines. For changes to the model, please refer to Master Response *Updated Domestic Cat Population Modeling Based on Technical Changes* which provides detailed information on these changes and why they were made, considering the technical input that was received during the public review process.

CEQA Guidelines Section 15088.5 state that new information added to an EIR is not “significant” unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon “a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement." As evident in the Draft EIR and the Final EIR, the proposed Project, through analysis presented in Chapters 3 and 4 of the Draft EIR, and any changes noted in Chapter 3 of the Final EIR, the City concluded that the proposed Project would not result in any significant impacts under CEQA and mitigation measures are not required. Please see Master Response *Mitigation Measures Are Not Required*.

According to the CEQA Guidelines, "significant new information" requiring recirculation include new significant environmental impacts would result from the project or from a new mitigation measure proposed to be implemented; a substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance; a feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the significant environmental impacts of the project, but the project's proponents decline to adopt it; the draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. (Mountain Lion Coalition v. Fish & Game Com.(1989) 214 Cal.App.3d 1043). The Draft EIR did not identify any significant impacts from the proposed Project and no mitigation measures were included. As presented in the Draft EIR and the Final EIR and supported by substantial evidence in the record, the environmental impacts from the proposed Project would be less than significant, and no mitigation measures are required. No new significant environmental impacts were identified that would require mitigation nor was there a substantial increase in the severity of an environmental impact as a result of changes made to the Draft EIR. The Draft EIR and Final EIR provide thorough analyses of the environmental resources and potential project-related effects analyzed in detail in the EIR (biological resources, water resources, and public health), and these analyses are supported by substantial evidence in the record, including but not limited to the Draft EIR and Final EIR and Master Responses in the Final EIR; accordingly, the City has determined that its analysis was appropriate. In addition, a detailed alternatives analysis was presented in Chapter 5 of the Draft EIR, and as noted in Chapter 3 of the Final EIR, no changes were made to the alternatives analysis. Please see Master Response Alternatives Analysis in the Final EIR for more details.

With respect to updates made to the cat population model, please note that while the population model has been updated, the conclusions of the Draft EIR remain valid with no changes being made to the CEQA analyses and impact determinations that were presented in Chapter 4 of the Draft EIR. Please see Master Response *Updated Domestic Cat Population Modeling Based on Technical Changes* in the Final EIR for details on the updated modeling methodology and results, Section 3.2.5.1 of the Final EIR for the updated population modeling results, and Updated Appendix J for an updated cat population modeling appendix. Note that the Final EIR and updated Appendix J do not simply list the parameter values that have been updated for the model, but as described in the aforementioned Master Response, results from the updated model are presented for the reader in the updated Appendix J and in Section 3.2.5 of the Final EIR. In response to comments on the cat population model used in the Draft EIR, the model was revised in several ways for the Final EIR to present the most accurate calculations to support the Draft EIR analysis. None of the revisions to the cat population model result in a change in any of significance conclusions or result in a substantial increase in the severity of the impacts analyzed in the Draft EIR. These technical changes can be broadly grouped into two categories: revisions requiring adjustments to the model code, and minor parameter revisions. With these revised modeling results based on technical updates, the CEQA impact analyses and determinations of less-than-significant impacts from the Project, as presented in Chapter 4 of the Draft EIR remain valid in the Final EIR.

Neither the Draft EIR nor the Final EIR rely on the program implementation guidelines as mitigation measures; the CEQA impact analysis and determinations in the Draft EIR do not rely on inclusion of the program implementation guidelines in the Project. Please see the intention of the program implementation guidelines and ecological conservation measures as included in the Draft EIR: "The program implementation guidelines and ecological conservation measures are intended to address existing impacts from the free-roaming cat population and protecting the health, safety, and welfare of wildlife and people." Therefore, these guidelines and measures were included in the proposed Project to address existing impacts from free-roaming cats in the City and not impacts from the proposed Project, which, as detailed in the Draft EIR, were found not to be significant and thus do not require mitigation under CEQA. See Master Response *Mitigation Measures Are Not Required*. Further, the program implementation guidelines have since been revised to ensure best practices are employed during any TNR activities and to clarify that they are non-mandatory elements that address only Project-related activities and not existing conditions (see Section 3.2.3 of the Final EIR). Please also see Master Responses *Revised Guidelines – 1- Mile Buffer around ESAs, Enforceability of Program Implementation Guidelines*, and *Revised Program Implementation Guidelines.* Through analysis presented in Chapters 3 and 4 of the Draft EIR, the City concluded that the proposed Project would not result in any significant impacts under CEQA and therefore mitigation measures are not required. The Project does not include feeding free-roaming cats or encourage the feeding of free-roaming cats, please see Master Response *The Proposed Project Does Not Encourage Feeding*.

In addition, fur purposes of recirculation under CEQA, no part of the analysis in the Draft EIR, as modified by the Final EIR, was fundamentally and basically inadequate by not addressing the required impacts, and the reviewer does not reference any.

In conclusion, there was no significant new information in the Final EIR that was added to the Draft EIR that required recirculation in a way that deprives the public of a meaningful review or understanding of the proposed Project and analysis in the Final EIR. The corrections, modifications, and technical updates to the Draft EIR contained in the Final EIR provide clarity, refinement, or supplemental information related to the proposed Project and/or Draft EIR, based upon comments received during the public review process and do not constitute significant new information or changes to the analysis or conclusions originally contained in the Draft EIR. Therefore, recirculation of the Draft EIR is not required.