\*\*\* SAS code to reproduce monte carlo runs for SW Fl Tidal Creeks

data all; set c.wq\_hab\_strat\_analysis\_for\_R;

if fixed = "No";

ltn=log(tn\_mgl);

ltp=log(tp\_mgl);

proc sort; by creek;

run;

proc means data=all noprint;

var tn\_mgl tp\_mgl ltn ltp;

output out=nlogs(drop=\_type\_ \_freq\_) mean= tn\_mgl tp\_mgl ln\_tn ln\_tp std= std\_tn std\_tp lnstd\_tn lnstd\_tp ;

run;

data pull; set nlogs;

call symput('std',lnstd\_tn);

run;

\*\* set mean between 0.20 and 0.50 by 0.1;

%do vr=20 %to 50;

data three;

r = &vr. /100;

do i=1 to 10000;

x=exp(r + &std.\*rannor(29584));

output;

end;

run;

proc surveyselect noprint data=three method = urs sampsize = 6

rep=10000 seed=12345 out=four outhits;

run;

data five; set four;

ln\_x = log(x);

proc sort; by replicate;

run;

proc means data=five noprint; by replicate;

var ln\_x;

output out=six mean=;

run;

data geo; set six;

geo\_mean=exp(ln\_x);

cnt65=0;

cnt54=0;

if geo\_mean > 1.65 then cnt65=1;

if geo\_mean > 1.54 then cnt54=1;

Log\_mean = "&vr.";

true\_geo = exp(&vr./100);

run;

proc means mean data=geo;

var cnt65 cnt54;

output out=geo\_cnt mean=exceed65 exceed54;

run;

\*\*\* the 5th percentile is what we are looking for;

data geo\_cnt2; length Log\_Mean $10.; set geo\_cnt;

Log\_mean = "&vr.";

true\_geo = exp(&vr./100);

run;

proc append data=geo\_cnt2 base=all\_cnts;run;

%end;

%mend main;

%main;run;

data c.all\_cnts; set all\_cnts;run;

/\*

When the true log\_mean value is .26 (26 for purposes of loop), the Peninsula threshold is exceeded 4.9% of the time which corresponds to a geometric mean of 1.297 which was rounded to 1.30

When the true log\_mean value is .33 (33 for purposes of loop), the West Central threshold is exceeded slightly more than 5% of the time which corresponds to a geometric mean of 1.39. The iteration lower resulted in a geomean of 1.37. Therefore 1.38 was chosen as the threshold for the West Central Region

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