Reeve
& Associates, Inc.

March 5, 2014

Rochelle Pfeaster
Weber County

Project: Silver Summit Estates Subdivision
Re: Weber County Engineering Division

Below please find our response to your Miradi posted comments dated February 25, 2014. Please note that our numbering reference system corresponds to your comment numbering system.

1. Signed plans have been provided.
2. The plat has been updated to show the snow removal easement and the existing well location for Lot #2. A proposed well will not be needed for Lot #2.
3. Stamped storm runoff calculations have been shown. Per our conversation on March 4, 2014, retention for the development has been provided outside of the ROW drainage swales. A copy of the percolation test results is also provided.
4. The following items have been addressed on sheet 4:
   a. The existing shed has been relocated.
   b. The existing grade note was moved to add clarity. The existing and proposed grades are relatively even at this point, so the note was moved.
   c. An 18" concrete pipe has been shown on plans.
   d. The 12" pipes are no longer needed.
   e. Check dams have been removed.
5. The construction plans for the future road have been included.
6. The Storm Water Construction Activity Permit will be submitted once it has been obtained.
7. The SWPPP has been completed and submitted.
8. Engineers cost estimate has been attached.

We appreciate your review and trust we have changed and/or clarified all of your comments. If you have any questions, or we can be of further assistance, please let us know.

Sincerely,
REEVE & ASSOCIATES, INC.

Chris J. Cave
Project Manager
ccave@reeve-assoc.com

Storm Runoff Calculations

Silver Summit Estates
Retention Area #1

3/4/2014 SKT

The following runoff calculations are based on the Rainfall - Intensity - Duration
Frequency Curve for the Huntsville, UT area taken from data compiled by
NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one
being the existing undeveloped land and the other with land fully improved. The
difference between the two quantities will be retained in a holding pond and
will percolate into the natural ground at 2.5 minutes per inch.

The calculations are as follows:

1. Runoff from the undeveloped existing land.

Runoff Quantity	$Q =$	See Equation Below	
Acreage	$A =$	7.60 ACRES	
Perc Rate		2.50 mpi	
$Q(out) =$	See Equation Below	4.17 CFS	

2. Runoff from developed land

Runoff Coefficients

Paved Area	24,500	$C = 0.9$
Landscaped Area	293,179	$C = 0.2$
Roof	13,500	$C = 0.8$

Weighted Runoff Coefficient $C = 0.28$

Rainfall Intensity $i =$ varies with time
Runoff Quantity $Q = CiA$

3. Detention Basin

Volume in $Q * t$
Volume out $4.17 * t$

The capacity of the retention basin is calculated as the maximum difference
between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped.
Use   4.17 cfs for Q outflow
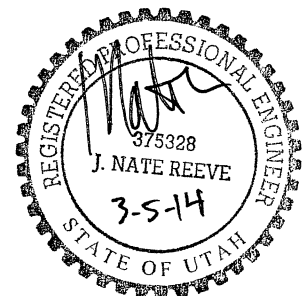
The required volume of the detention basin is   4,850 cubic feet

Bottom Area of Basin	**Percolation out of Basin**	
7500 s.f.	(1in/Perc)*(1ft/12in)*(1min/60sec)*Area of Basin	4.167

Storm Runoff Calculations
Silver Summit Estates
Retention Area #2
3/4/2014 SKT

The following runoff calculations are based on the Rainfall - Intensity - Duration
Frequency Curve for the Huntsville, UT area taken from data compiled by
NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one
being the existing undeveloped land and the other with land fully improved. The
difference between the two quantities will be retained in a holding pond and
will percolate into the natural ground at 2.5 minutes per inch.

The calculations are as follows:

1. Runoff from the undeveloped existing land.

Runoff Quantity	Q =	See Equation Below
Acreage	A =	9.04 ACRES
Perc Rate		2.50 mpi
Q(out) = See Equation Below		4.17 CFS

2. Runoff from developed land
    Runoff Coefficients

Paved Area	17,080	C = 0.9
Landscaped Area	358,891	C = 0.2
Roof	18,000	C = 0.8

Weighted Runoff Coefficient   C = 0.26

Rainfall Intensity   i = varies with time
Runoff Quantity   Q = CiA
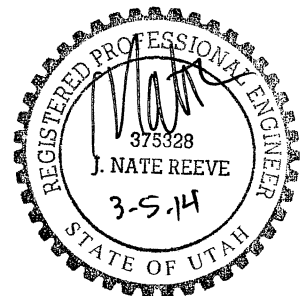
3. Detention Basin
    Volume in   Q * t
    Volume out   4.17 * t

The capacity of the retention basin is calculated as the maximum difference
between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped.
Use   4.17 cfs for Q outflow

The required volume of the detention basin is   5,797 cubic feet

Bottom Area of Basin   **Percolation out of Basin**
    7500 s.f.   (1in/Perc)*(1ft/12in)*(1min/60sec)*Area of Basin   4.167

Storm Runoff Calculations

Silver Summit Estates
Retention Area #3

3/4/2014 SKT

The following runoff calculations are based on the Rainfall - Intensity - Duration Frequency Curve for the Huntsville, UT area taken from data compiled by NOAA Atlas 14, using a 100 year storm.

Runoff storm water has been calculated for two different sets of conditions, one being the existing undeveloped land and the other with land fully improved. The difference between the two quantities will be retained in a holding pond and will percolate into the natural ground at 2.5 minutes per inch.

The calculations are as follows:
1. Runoff from the undeveloped existing land.

Runoff Quantity	Q =	See Equation Below	
Acreage	A =	9.36	ACRES
Perc Rate		2.50	mpi
Q(out) =	See Equation Below	4.17	CFS

2. Runoff from developed land

Runoff Coefficients

Paved Area	13,020	C = 0.9
Landscaped Area	372,176	C = 0.2
Roof	22,500	C = 0.8

Weighted Runoff Coefficient $\qquad$ C = 0.26

Rainfall Intensity	i = varies with time
Runoff Quantity	Q = CiA

3. Detention Basin

Volume in	Q * t
Volume out	4.17 * t

The capacity of the retention basin is calculated as the maximum difference between the volume flowing in and the volume flowing out.

The outflow from the retention basin is limited to outflow if undeveloped.
Use   4.17 cfs for Q outflow

The required volume of the detention basin is   6,041 cubic feet

Bottom Area of Basin	**Percolation out of Basin**	
7500 s.f.	(1in/Perc)*(1ft/12in)*(1min/60sec)*Area of Basin	4.167

Silver Summit Estates
Engineers Cost Estimate
3/5/14 SKT 4825-08

Description	Item	Unit	Unit Price	Amount	
Storm Drain					
18" R.C.P. Pipe	60	l.f.	$28.40	$1,704.00	
12" R.C.P. Pipe	195	l.f.	$20.50	$3,997.50	
Excavation of Retention Basin	1,800	c.y.	$3.50	$6,300.00	
					$12,001.50
Street Improvements					
8" Gravel Base and 3" Asphalt Surface	5,725	s.y.	$19.75	$113,068.75	
Asphalt Chip & Seal	5,725	s.y.	$2.25	$12,881.25	
Excavation	950	c.y.	$4.50	$4,275.00	
Drainage Ditch	4,850	l.f.	$5.00	$24,250.00	
Gravel Walkway	600	l.f.	$9.25	$5,550.00	
					$160,025.00
Misc.					
Street Signs	1	ea	$175.00	$175.00	
SWPPP	1	l.s.	$3,500.00	$3,500.00	
					$3,675.00
Subtotal					$175,701.50
Contingency (10%)					$17,570.15
Total Estimated Cost					**$193,271.65**

* This is an estimate only. The owner/developer is responsible to verify amounts.
  The approved project plans are the governing document.

Reeve
& Associates, Inc.

PERCOLATION TESTS

Date: 8-16-13
Name of Client: Matt Lowe, Silver Summit Estates.
Location of Property: 9096 E 1300 S, Huntsville, UT. #21-035-0079. Evaluation # 13956 and #13939

Depth to Water Table / Soil Conditions: <u>No ground water encountered.</u>

I hereby certify to the best of my knowledge that percolation tests have been conducted on the above property in accordance with requirements specified in R317, Utah Administrative Code, and that percolation rates, calculated as specified by said rule, are as follows:

Test Pit Number	Lot #	Perc. Test Depth	Test Hole Diameter (in)	Time Interval Used for Drop	Final Stabilized Percolation Rate Minutes/Inch
4	1	24	8	30 Minutes	26.67
			8	30 Minutes	**26.67**
4	1	48	14	10 Minutes	2.50
			14	10 Minutes	**2.50**
5	2	23	8	30 Minutes	16.00
			8	30 Minutes	**16.00**
5	2	48	12	10 Minutes	2.35
			12	10 Minutes	**2.35**
2	3	22	8	30 Minutes	20.00
			8	30 Minutes	**20.00**
2	3	48	12	10 Minutes	2.35
			12	10 Minutes	**2.35**

Existing	4				Ex Home/Onsite System
14	5	24	8	30 Minutes	32.00
			8	30 Minutes	**32.00**
13	6	24	8	30 Minutes	32.00
			8	30 Minutes	**32.00**
10	7	20	8	30 Minutes	16.00
			8	30 Minutes	**16.00**
10	7	48	14	10 Minutes	2.50
			14	10 Minutes	**2.50**
9	8	24	8	30 Minutes	16.00
			8	30 Minutes	**16.00**
9	8	48	13	10 Minutes	2.67
			13	10 Minutes	**2.67**
8	9	14	8	30 Minutes	20.00
			8	30 Minutes	**20.00**
7	10	18	8	30 Minutes	32.00
			8	30 Minutes	**32.00**
7	10	48	12	10 Minutes	2.50
			12	10 Minutes	**2.50**
6	11	14	8	30 Minutes	13.33
			8	30 Minutes	**13.33**
11	12	22	8	30 Minutes	16.00
			8	30 Minutes	**16.00**
12	13	23	8	30 Minutes	20.00
			8	30 Minutes	**20.00**

J. Nate Reeve, P.E.