



ASSOCIATES:  
James Q. Morley, P.E., P.L.S.  
Lee A. McClellan, P.E.  
Danny K. Leek, P.L.S.

Engineering ~ Surveying ~ Architecture ~ Construction Management

May 20, 2015

Vanderburgh County Drainage Board  
Attention: Jeff Mueller, Vanderburgh County Surveyor  
Civic Center Complex - Room 325  
Evansville, IN 47708

**Re: Cayman Ridge Sections 2 and 3  
Revised Swale 212 Cross Section  
Morley and Associates, Inc. Project No. 5811.4.001 B**

Dear Mr. Mueller,

On behalf of the Developer, we are requesting approval of Swale 212 as it exists in the field although it is inconsistent with the originally approved typical swale cross section. The existing swale has capacity to carry the flow entering the swale based on information in the approved drainage report for the subdivision. The lot owners adjoining S212 have agreed to keeping the existing S212 cross sections as they are.

Attached to this request are the following supporting documents:

1. Excerpt from the approved drainage report with designed required flow capacity information.
2. Cross sections of the existing as-built S212, certified by Engineer.
3. Calculations determining flow capacity of the existing as-built S212 compared to required flow capacity.
4. Letters from lot owners adjoining S212 agreeing to acceptance of the existing S212 cross sections.
5. Copy of your email dated May 11, 2015 detailing requirements for modifying the approved drainage plan.

Based on the attached information, we request that you present the information to the Drainage Board and recommend approval of the design revision allowing the as-built S212 to remain in place. We also request release of the letter of credit for Cayman Ridge Sections 2 and 3 upon approval of the design revisions by the Drainage Board.

If you should have any questions or need further information, please contact our office as soon as possible.

Sincerely,

A handwritten signature in blue ink, appearing to read 'James E. Morley', is written over a blue ink scribble. Below the signature, the name 'James E. Morley, P.E.' is printed in a black, sans-serif font.

James E. Morley, P.E.

cc: John Stoll - Vanderburgh County Engineer  
Ray Zeller  
File

J:\5000s\5800-5899\5811\5811 Record Drainage Sec 2 and 3\2015-05-20 Drainage Addendum Request\Drainage Addendum Letter for S212 5-20-15.doc

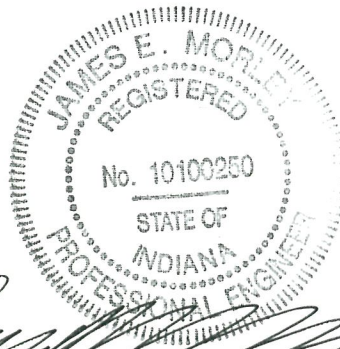
EXCERPT FROM  
**FINAL DRAINAGE REPORT**  
for  
**Cayman Ridge**  
(formerly named Country View)  
**Vanderburgh County, IN**

Prepared For:

*Baywood Development, LLC .*  
*P.O. Box 149*  
*Newburgh, IN 47629*  
*Phone: (812) 858-2538*

Prepared By:

*Morley and Associates, Inc.*  
*600 S.E. Sixth Street*  
*Evansville, Indiana 47713*  
*Phone: (812) 464-9585*  
*Fax: (812) 464-2514*



A handwritten signature in black ink, appearing to read "James E. Morley", written over the professional seal.

*Project No.: 5811-4(B)*  
*Feb 2004*

**Morley and Associates** INC.  
CONSULTING ENGINEERS ♦ LAND SURVEYORS ♦ ARCHITECTS



# Developed Drainage Subbasins



SWALE 212  
PART OF  
SUBBASIN 32

Remainder Area  
6.00 Acres

Northeast Corner  
N.W. 1/4, SE 1/4  
Section 22-5-10  
Subbasin 32  
Stonewall Sub.

5/8" Riser with plastic cap  
0.5' East and 0.11' North  
of the collocated corner  
August 10, 1979

Retention Basin  
Storage depth 4:1 slopes  
1.5' Freeboard  
Elev. = 201.77  
Storage Depth = 4.0 ft  
Max. Storage Vol. = 395

5/8" Riser with plastic cap  
0.5' East & 0.11' North  
of the collocated corner  
August 10, 1979

Southwest Corner  
S.W. 1/4, SE 1/4  
Section 22-5-10  
Subbasin 32  
Stonewall Sub.

There was reserved in  
Deed Book 78, page 306, 307  
& 308, all dated Aug 29, 1901,  
a right of ingress & egress  
to the Church and Public  
highway through the existing lane.

Southwest Corner  
S.W. 1/4,  
Section 22-5-10  
5" Pipe (hd)  
(Use this Survey)

5/8" Riser with  
plastic cap stamped  
Worley & Assoc IO #0023

Approximate Limits  
of Cemetery

Line of trees  
maintained by  
Approximately 1/2 mile  
from Kansas Ave  
Dear Plate 221

5/8" Riser with  
plastic cap stamped  
Worley & Assoc IO #0023

5/8" Riser with  
plastic cap stamped  
Worley & Assoc IO #0023

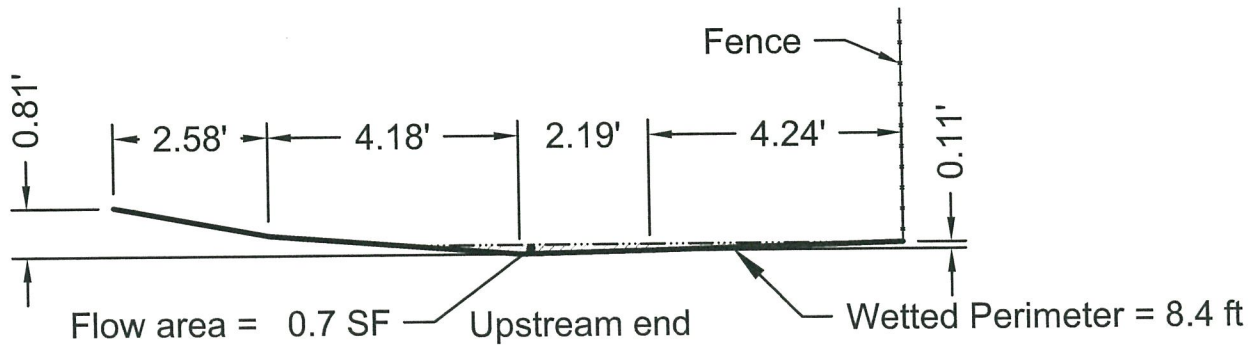
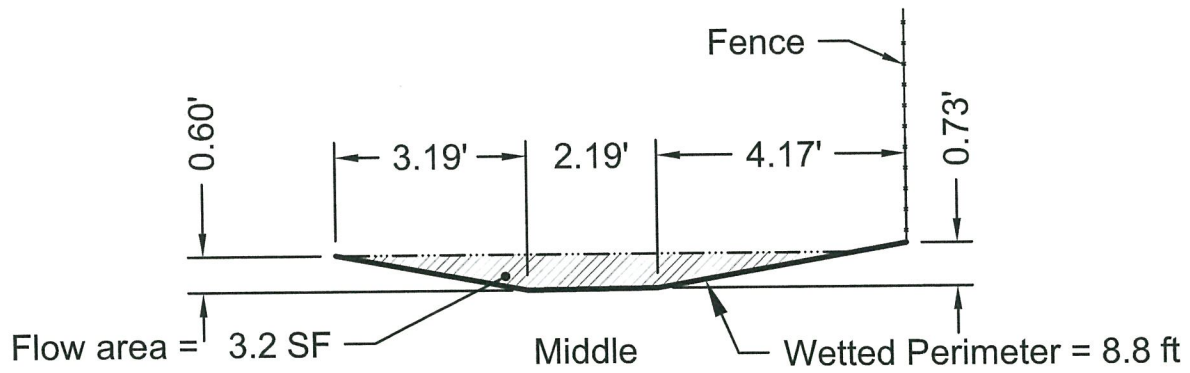
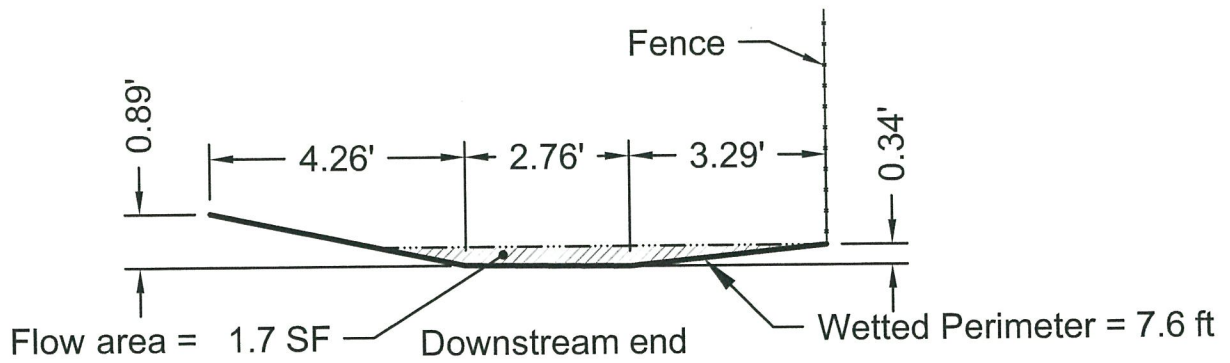
5/8" Riser with  
plastic cap stamped  
Worley & Assoc IO #0023

5/8" Riser with  
plastic cap stamped  
Worley & Assoc IO #0023

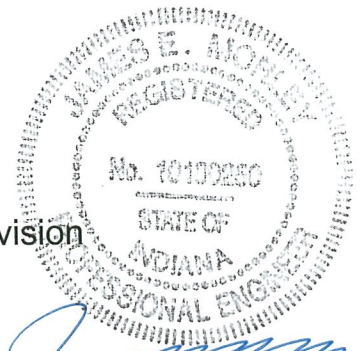


**Table 3. Summary of Developed Onsite Drainage Subbasins**

Subbasin	Area (ac.)	Weighted C	Weighted N	S (%)	tc (minutes)	I (in/hr.)	Q(25) (CFS)
1	4.38	0.58	0.22	0.86%	35.93	3.336	8.52
2	0.71	0.75	0.12	1.23%	14.42	5.137	2.74
3	0.60	0.75	0.11	1.19%	14.00	5.212	2.36
4	2.22	0.74	0.12	1.00%	18.97	4.666	7.70
5	4.40	0.59	0.22	1.56%	21.08	4.471	11.71
6	0.76	0.74	0.12	1.85%	14.24	5.169	2.92
7	1.36	0.72	0.13	1.96%	14.53	5.117	5.03
8	0.72	0.74	0.12	1.22%	14.77	5.075	2.73
9	5.30	0.58	0.27	2.09%	40.16	3.115	9.50
10	1.05	0.76	0.11	2.44%	14.55	5.114	4.06
11	1.36	0.59	0.21	2.65%	19.11	4.653	3.73
12	1.11	0.67	0.16	3.25%	13.82	5.243	3.89
13	1.01	0.73	0.13	1.72%	12.21	5.531	4.03
14	3.06	0.57	0.22	3.27%	17.88	4.767	8.39
15	0.83	0.72	0.13	3.32%	13.05	5.382	3.22
16	0.69	0.76	0.11	2.93%	10.35	5.863	3.07
17	0.69	0.76	0.11	2.93%	10.35	5.863	3.07
18	0.93	0.75	0.12	2.88%	14.04	5.204	3.60
19	3.03	0.54	0.24	2.71%	24.54	4.151	6.85
19a	1.10	0.44	0.30	2.71%	27.18	3.907	1.90
20	0.88	0.72	0.13	3.00%	14.50	5.122	3.26
21	1.46	0.77	0.11	1.22%	14.69	5.088	5.69
22	1.04	0.72	0.13	1.58%	14.17	5.182	3.92
23	0.70	0.77	0.10	2.85%	11.32	5.690	3.09
24	0.24	0.56	0.23	3.44%	10.99	5.748	0.77
25	1.96	0.64	0.20	2.87%	19.85	4.585	5.71
26	1.04	0.77	0.10	2.06%	14.57	5.110	4.13
27	1.16	0.72	0.14	4.08%	13.37	5.324	4.44
28	3.02	0.56	0.23	3.63%	21.81	4.403	7.44
29	1.56	0.63	0.20	2.93%	18.18	4.739	4.63
30	1.32	0.77	0.10	2.76%	11.18	5.715	5.82
31	1.05	0.72	0.13	2.76%	12.51	5.477	4.15
32	2.08	0.59	0.22	2.91%	20.69	4.507	5.54
33	0.96	0.72	0.14	2.04%	15.88	4.952	3.39
34	0.89	0.68	0.16	2.94%	15.62	4.975	3.00
35	0.95	0.71	0.14	1.01%	15.15	5.020	3.42
36	0.96	0.72	0.14	2.04%	15.86	4.953	3.39
37	1.45	0.49	0.28	1.36%	27.48	3.879	2.74
38	0.60	0.76	0.11	1.43%	12.75	5.434	2.45
39	1.28	0.55	0.25	3.11%	18.28	4.730	3.35
40	1.17	0.70	0.14	3.97%	8.64	6.275	5.15
41	1.02	0.53	0.24	3.46%	14.84	5.062	2.73
42	0.72	0.75	0.11	3.91%	11.43	5.669	3.08
43	0.72	0.75	0.11	3.81%	11.53	5.652	3.08
44	0.37	0.60	0.25	2.11%	15.14	5.020	1.11
45	0.82	0.76	0.11	1.03%	16.15	4.927	3.06
46	0.76	0.69	0.15	1.10%	18.04	4.752	2.50
47	0.43	0.66	0.17	2.97%	11.77	5.610	1.59
48	0.54	0.69	0.15	2.52%	11.47	5.663	2.11
49	0.36	0.76	0.11	1.62%	10.75	5.791	1.57
50	1.70	0.51	0.25	2.88%	22.57	4.333	3.78
51	1.13	0.74	0.12	3.47%	13.58	5.286	4.44
52	0.65	0.74	0.12	1.15%	15.71	4.967	2.38
53	0.98	0.50	0.26	5.48%	13.55	5.292	2.58
54	0.97	0.76	0.11	1.93%	15.10	5.024	3.69
55	0.18	0.63	0.19	2.72%	7.29	6.619	0.77
56	0.18	0.63	0.19	2.72%	7.28	6.623	0.75
57	0.59	0.52	0.25	3.73%	12.95	5.398	1.65
58	0.93	0.75	0.12	4.08%	12.42	5.493	3.84
59	0.96	0.50	0.26	2.27%	17.83	4.771	2.31
60	0.26	0.38	0.20	See Excel Sheets	7.76	6.499	0.65
61	8.79	0.44	0.33	See Excel Sheets	14.30	5.158	19.94
62	4.36	0.40	0.42	See Excel Sheets	17.95	4.760	8.39



Cross Sections of S212  
 As-built Surveyed Nov 17, 2014  
 Requesting Approval as Design Revision  
 NO SCALE



*James E. Moore*  
 5-20-15





FROM APPROVED FINAL DRAINAGE REPORT :

S212 IS CONTAINED IN SUBBASIN 32 WHICH ALSO INCLUDES S211 & S213. S212 TAKES FLOW FROM 0.12 ACRES

SUBBASIN 32 HAS A TOTAL AREA OF 2.08 ACRES AND A TOTAL FLOW RATE OF 5.54 CFS.

FOR S212 FLOW RATE ESTIMATE :

$$\left(\frac{0.12}{2.08}\right)(5.54 \text{ CFS}) = \boxed{0.32 \text{ CFS}} \text{ REQUIRED S212 CAPACITY AT DS END.}$$

CURRENT SURVEYED CROSS SECTION OF S212  
SEE ATTACHED SHEET. (SURVEY DATE 11-17-2014)

FLOW RATE CAPACITY OF SWALE (AVERAGE)

$$Q = \frac{R_h^{2/3} S^{1/2} A}{n}$$

$R_h$  = hydraulic radius  
=  $A$  / WETTED PERIMETER  
 $S$  = Slope (Average flowline)  
Slope

$A$  = Area of flow  
 $n$  = Manning's Coeff = 0.03

$$R_h (\text{upstream}) = 0.7/8.4 = 0.083 \text{ ft}$$

$$R_h (\text{middle}) = 3.2/8.8 = 0.364 \text{ ft}$$

$$R_h (\text{downstream}) = 1.7/7.6 = 0.224 \text{ ft}$$

$$R_h (\text{Average}) = \frac{(0.083 + 0.364 + 0.224)}{3} = 0.224 \text{ ft}$$

$$A (\text{Average}) = \frac{(0.7 + 3.2 + 1.7)}{3} = 1.87 \text{ SF}$$

$$S (\text{Average}) = \frac{(432.74 - 430.65)}{136.46} = 0.0153$$

$$Q_{\text{Avg}} = \frac{(0.224)^{2/3} (0.0153)^{1/2} (1.87)}{0.03} = \frac{(0.37)(0.124)(1.87)}{0.03} = 2.86 \text{ CF}$$



$$Q(\text{Downstream}) = \frac{(0.224)^{2/3} (0.0153)^{1/2} (1.7)}{0.03}$$

$$= \frac{(0.37) (0.124) (1.7)}{0.03}$$

$= \underline{\underline{2.60 \text{ CFS}}}$	AVAILABLE SWALE 212 CAPACITY AT DOWNSTREAM END
--	--

$$Q_{\text{required}} = 0.32 \text{ CFS}$$

$$Q_{\text{Average Exist.}} = 2.86 \text{ CFS}$$

$$Q_{\text{DOWNSTREAM EXIST.}} = 2.60 \text{ CFS}$$

\*

THEREFORE EXISTING S212 AS-BUILT HAS CAPACITY TO CARRY THE REQUIRED FLOW MEETING THE INTENT OF THE APPROVED DRAINAGE PLAN.

\*

REQUESTING APPROVAL/ACCEPTANCE OF THE AS-BUILT CROSS SECTION OF S212 AS DESIGN ADDENDUM.



January 18, 2015

This statement is being written to advise Vanderburgh County that property owners adjoining swale 212 in Cayman Ridge Subdivision are in agreement and have signed off on the following statement.

As property owners in the said subdivision I have no complaints of the swale in its' current state, nor have I observed any adverse problem due to heavy rain events in which my property was in danger of flood damage. Due to the current vegetated state of my yard I do not wish to have heavy construction equipment disturb my yard causing time consuming efforts to re-establish it to its current state.

Lot 231, 2312 Verona Ct. Russell & Mary Askren

Lot 232, 2311 Verona Ct. Donita Webb

Lot 181, 9633 Blyth Dr. Melvin & April Moore

Lot 180, 9629 Blyth Dr. RJC INC

*Mary Askren*  
*Russell Askren*



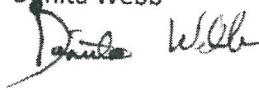
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Lot 231, 2312 Verona Ct. Russell & Mary Askren

Lot 232, 2311 Verona Ct. Donita Webb

A handwritten signature in black ink that reads "Donita Webb". The signature is written in a cursive style with a large initial "D".

Lot 181, 9633 Blyth Dr. Melvin & April Moore

Lot 180, 9629 Blyth Dr. RJC INC.

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Lot 232, 2311 Verona Ct. Donita Webb

Lot 181, 9633 Blyth Dr. Melvin & April Moore

Lot 180, 9629 Blyth Dr. RJC INC.

*We have had no water Damage  
so far -*  
  
*Melvin Moore*



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Lot 232, 2311 Verona Ct. Donita Webb

Lot 181, 9633 Blyth Dr. Melvin & April Moore

Lot 180, 9629 Blyth Dr. RJC INC.

*Randy Jetter President*

812-423 0784

449-1861

## Bethany Hopf

---


**From:** James E. Morley  
**Sent:** Monday, May 11, 2015 3:26 PM  
**To:** Bethany Hopf  
**Subject:** Fwd: Cayman Ridge

Please prepare docs and get signature letter from Ray.

Thanks,  
Jim Jr.

James E. Morley PE, PLS  
Morley and Associates, Inc  
4800 Rosebud Lane  
Newburgh, IN 47630  
[jem@morleyandassociates.com](mailto:jem@morleyandassociates.com)  
Office 812-464-9585  
Fax 812-464-2514

Begin forwarded message:

 **From:** "Mueller, Jeffrey" <[jmueller@vanderburghsurveyor.com](mailto:jmueller@vanderburghsurveyor.com)>  
**Date:** May 11, 2015 at 3:21:54 PM CDT  
**To:** 'Ray Zeller' <[rzeller234@aol.com](mailto:rzeller234@aol.com)>, "[jem@morleyandassociates.com](mailto:jem@morleyandassociates.com)" <[jem@morleyandassociates.com](mailto:jem@morleyandassociates.com)>  
**Cc:** "Stoll, John" <[JStoll@vanderburghgov.org](mailto:JStoll@vanderburghgov.org)>  
**Subject:** RE: Cayman Ridge

Ray and Jim,

I met with Joe Harrison, County Attorney, today. He is fine with the concept. What we need is a simple letter addressed to the Drainage Board requesting a modification to the approved Drainage Plan. The modification request would state that swale # \_\_\_ would be modified to the actual cross sections that would be enclosed. Jim, the previous drawing would be fine, just label that they are for the swale in question. The drawing would need to be certified. State in the letter that the existing landowners approve the change and that you are submitting with the submittal their signed statements to the approval. The "package" (letter to the Drainage Board, the signed statements and the drawing) will be submitted to the Drainage Board for their approval.

Jeff

**From:** Ray Zeller [<mailto:rzeller234@aol.com>]  
**Sent:** Wednesday, April 22, 2015 10:46 PM  
**To:** Stoll, John; Mueller, Jeffrey  
**Cc:** [jem@morleyandassociates.com](mailto:jem@morleyandassociates.com)  
**Subject:** Cayman Ridge

John and Jeff, I am inquiring about the status of Cayman Ridge being accepted. Jim Morley sent you the homeowners letters that you requested at our meeting in January 2015 back on February 10, 2015. I have inquired about it since and have not got a reply on status. I am under the impression when we had