Basin B (Q_5=7.0 cfs, Q_{100}=13.5 cfs) is approximately 2.20 acres and consists of recycled asphalt parking and drives, and landscaping. Runoff from this basin is conveyed via sheet flow across the proposed asphalt mat to DP2, where flow enters a Type C Inlet in sump. The emergency overflow path for this inlet is the proposed full spectrum detention pond to the south. Flow is routed through the proposed storm sewer system to DP3.1 (Q_5=15.7 cfs, Q_{100}=30.7 cfs) where flow will be captured and treated in the full spectrum detention pond.

Basin C (Q_5=4.8 cfs, Q_{100}=9.5 cfs) is approximately 1.57 acres and consists of recycled asphalt parking and drives, and landscaping. Runoff from this basin is conveyed via sheet flow across the proposed asphalt mat to DP3, where flow enters a Type C Inlet in sump. The emergency overflow path for this inlet is the proposed full spectrum detention pond to the southeast. Flow is routed through the proposed storm sewer system to DP3.1 (Q_5=15.7 cfs, Q_{100}=30.7 cfs) where flow will be captured and treated in the full spectrum detention pond.

Basin D (Q_5=1.6 cfs, Q_{100}=3.7 cfs) is approximately 0.82 acres and consists of recycled asphalt drives and parking, landscaping, and the proposed full spectrum detention pond. Runoff for this basin is collected in the bottom of the pond at DP4 where it is treated.

Basin E (Q_5=0.1 cfs, Q_{100}=0.5 cfs) is approximately 0.17 acres of landscaping and a small portion of the recycled asphalt drive. Runoff from this basin drains via overland flow to the south east across the site boundary and onto Homestead at Sterling Ranch Filing No. 1 at DP5. In the existing condition the site sends more water to Homestead at Sterling Ranch Filing No. 1 at existing DP3 (Q_5=0.2 cfs, Q_{100}=1.3 cfs).

Basin F (Q_5=0.0 cfs, Q_{100}=0.2 cfs) is approximately 0.07 acres of landscaping. Runoff from this basin drains via overland flow to the south across the site boundary and onto Homestead at Sterling Ranch Filing No. 1 offsite basin OS-11 at DP6.

Basin G (Q_5=0.1 cfs, Q_{100}=0.8 cfs) is approximately 0.24 acres and is comprised of landscaping and swale section B-B. Runoff from this basin overland flows to roadside swale B-B and then enters the proposed culvert under the access at DP7, flow continues to DP7.1 (Q_5=0.8 cfs, Q_{100}=2.2 cfs) where flows from Basins G and OS-9 combine, and continues to flow through the proposed culvert to swale C-C located in Basin I.

Basin H (Q_5=0.1 cfs, Q_{100}=0.3 cfs) is approximately 0.11 acres and is comprised of landscaping. Runoff fro ision at DP8. Flow follow ing condition at existing D

JR Response: DP9.1 does include this flow. Revised wording. See the comments on the SF-3 form for calculation.

Basin I (Q_5=0.5 cfs, Q_{100}=1.2 cfs) is approximately 0.24 acres and is comprised of the existing Vollmer Place, proposed roadside swale C-C, and the drive access. Runoff from this basin overland flows to the roadside ditch DP9, flow continues to DP9.1 (Q_5=2.0 cfs, Q_{100}=9.1 cfs) where flows from DPP1 and DP9 combine. Flow follows existing drainage patterns to the south per Woodmen View Storage Plot Plan presented in Appendix D. Flows released from this basin are less than in the existing condition, existing DP5.1 (Q_5=2.8 cfs, Q_{100}=12.8 cfs).

This needs to include flow from DP O11 & DP 7.1. It appears 100 year will be more than existing.

be captured due to existing grades and vertical constraints. See Appendix I for supporting Water Quality Map.

Step 4, Consider the need for Industrial and Commercial BMP's: Temporary BMPs will be utilized during construction to minimize off-site contaminates and to protect the downstream receiving waters, Site specific temporary source control BMPs that will be implement include, but are not limited to, silt fencing, construction vehicle tracking pads, designated fueling areas, covered storage areas, spill containment and control, etc. The permanent erosion control BMPs include recycled asphalt parking and drives, permanent vegetation, a storm culvert under the access, and a full spectrum water quality and detention pond.

Water Quality

Water quality for the site is provided by a private full-spectrum detention and water quality pond (Pond V1) in the southeast corner of the site. Table 2 below shows the basin parameters. The proposed pond is sized so that the WQCV for the pond shall be released within 40 hours and the EURV shall be released within 72 hours. Table 3 below gives the design storm results. The proposed pond will utilize a forebay, trickle channel, and outlet structure to dissipate energy and treat flows. The outlet structure for the pond shall reduce the release rates for all storm events to less than historic rates to minimize adverse impacts to downstream stormwater facilities. A broad crested weir will be provided as an emergency spillway and will convey emergency flows to proposed swale B-B. Per ECM 1.7.C.a up to 20% not to
where it is not practical to cap
propose Pond V1. These basins
line make it so it is not feasibl
basins are all less in the propos
downstream impacts anticipated with the development of this site. Approximately 13% or 0.83 acres of the site is unable to be captured due to existing grades and vertical constraints, which meets ECM 1.7.C.a. See Appendix E for supporting Water Quality Map.

JR Response: DP9.1 does include flow from pond release rate. See the comments on the SF-3 form for calculation. Flows exiting the site are less than the proposed condition.

Basin flows still need to be combined with pond release rates. It appears at that point, flows exiting site (DP9.1) may be more than existing. Please revise statement accordingly.

Table 2 - Watershed Design Parameters

Watershed Area	6.02 AC
Percent Impervious	71.0%
Watershed Slope	0.021 ft/ft

Table 3 - Design Storm Results

Design Storm Period	Estimated Volume (AC-FT)	Design Volume (AC-FT)	Depth (FT)	$Q_{out\ 100}$ (CFS)
WQCV	0.14	0.14	2.61	0.1
EURV	0.33	0.36	4.42	0.2
100-YR	0.74	0.74	5.4	5.7

STANDARD FORM SF-3 - PROPOSED CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: McClintock Station Filing No. 1A
Location: El Paso County
Design Storm: 5-Year

Project Name: Vollmer Road RV Storage
Project No.: 25251.00
Calculated By: APL
Checked By: REB
Date: 1/12/24

STREET	Design Point	DIRECT RUNOFF: Basin ID	Area (Ac)	Runoff Coeff.	t_c (min)	C*A (Ac)	I (in/hr)	Q (cfs)	TOTAL RUNOFF: tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	STREET: Q_{street} (cfs)	C*A (ac)	Slope (%)	PIPE: Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	TRAVEL TIME: Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	A	1.43	0.65	7.7	0.92	4.52	4.2															Runoff from Basin A, overland flows south to DP1, flow enters Inlet A, a Type C inlet in sump. Flow
	2	B	2.20	0.72	8.3	1.59	4.41	7.0															Flow
	2.1								8.3														
	3	C	1.57	0.69	8.1	1.09	4.45	4.8															s
									8.6														
												.25	1.6										
												.65	0.1										
												.48	0.0										ling
												.31	0.7										e at
												.17	0.1										
									17.3	0.23	3.31	0.8											DPO9 and DP7 combine in roadside swale before entering culvert at site access.
	O11	OS-11	0.12	0.09	10.0	0.01	4.13	0.0															Runoff from Basin OS-11, overland flows west into the Site at DPO11.
	9	I	0.24	0.46	6.4	0.11	4.80	0.5															Runoff from Basin I overland slows southeast to the roadside swale along Vollmer Place to DP9.
	P1							0.8															5 year release from the pond.
	9.1								17.3	0.35	3.31	2.0											Flows from DP6, DP7.1, DPO11, and DP9 combine in the roadside swale before exiting the site at DP9.1 and following existing drainage patterns.
	8	H	0.11	0.09	5.0	0.01	5.17	0.1															Runoff from Basin H, overland flows south, across the property line to Mc Clintock Stations B and C.
	O10	OS-10	0.81	0.33	18.3	0.27	3.22	0.9															Offsite basin runoff is collected in the roadside swale along Vollmer Road to DPO10 where flow enters a proposed 18" driveway culvert.

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

JR Response:
Per reviewer request, created DPO11.1 which accounts for flow entering back onsite from Basin F and OS11. DPO11.1 is then routed to DP9.1. See provided spreadsheet and comment to the right.

JR Response:
This DP does include DP1, the pond release rate. See below for calculations as well as the provided spreadsheet.

DP7.1 C*A = 0.23, DPO11.1 C*A = 0.02, DP9 C*A = 0.11
Equals DP9.1 C*A = 0.35 (rounding difference, see spreadsheet provided)

DP9.1 flows use that C*A value to Q_5=1.2 cfs, adding the DP P1 (Q_5=0.8 cfs) to flow
DP9.1 Q_5=1.2 cfs + 0.8 cfs = 2.0 cfs

DP9.1 therefore is the culmination of all flow exiting site

DP O11 should include Basin F/DP 6, as this flow enters Basin OS-11, which then flows back onsite. Please update routing to account for this.

This DP should also include DP P1, the pond release rate. DP is culmination of all flow exiting site.

STANDARD FORM SF-3 - PROPOSED CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: McClintock Station Filing No. 1A
Location: El Paso County
Design Storm: 100-Year

Project Name: Vollmer Road RV Storage
Project No.: 25251.00
Calculated By: APL
Checked By: REB
Date: 1/12/24

		DIRECT RUNOFF							TOTAL RUNOFF				STREET			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (ac)	Runoff Coeff.	t_c (min)	C*A (ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	A	1.43	0.77	7.7	1.10	7.59	8.4															Runoff from Basin A, overland flows south to DP1, flow enters Inlet A, a Type C inlet in sump. Flow is
	2	B	2.20	0.83	8.3	1.82	7.41	13.5															w is
	2.1								8.3	2.9													
	3	C	1.57	0.81	8.1	1.27	7.48	9.5															iped
									8.5	4.1													
								3.7															
								0.5															
								0.2															g
								1.7															
								0.8															
									17.3	0.39	5.55	2.2											DPO9 and DP7 combine in roadside swale before entering culvert at site access.
	O11	OS-11	0.12	0.36	10.0	0.04	6.93	0.3															Runoff from Basin OS-11, overland flows west into the Site at DPO11.
	9	I	0.24	0.63	6.4	0.15	8.06	1.2															Runoff from Basin I overland slows southeast to the roadside swale along Vollmer Place to DP9.
	P1							5.7															100 year release from the pond.
	9.1								17.3	0.61	5.55	9.1											Flows from DP6, DP7.1, DPO11, and DP9 combine in the roadside swale before exiting the site at DP9.1 and following existing drainage patterns.
	8	H	0.11	0.36	5.0	0.04	8.68	0.3															Runoff from Basin H, overland flows south, across the property line to Mc Clintock Stations B and C.
	O10	OS-10	0.81	0.54	18.3	0.44	5.41	2.4															Offsite basin runoff is collected in the roadside swale along Vollmer Road to DPO10 where flow enters a proposed 18" driveway culvert.

JR Response:
Per reviewer request, created DPO11.1 which accounts for flow entering back onsite from Basin F and OS11. DPO11.1 is then routed to DP9.1. See provided spreadsheet and comment to the right.

JR Response:
This DP does include DP1, the pond release rate. See below for calculations as well as the provided spreadsheet.

DP7.1 C*A = 0.39, DPO11.1 C*A = 0.07, DP9 C*A = 0.15
Equals DP9.1 C*A = 0.61 (see spreadsheet provided)

DP9.1 flows use that C*A value to Q_5=3.4 cfs, adding the DP P1 (Q_{100}=5.7 cfs) to flow
DP9.1 Q_{100}=3.4 cfs + 5.7 cfs = 9.1 cfs

DP9.1 therefore is the culmination of all flow exiting site

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

See comments on previous page