ENT 6124:2020 PG 1 of 19
JEFFERY SMITH
UTAH COUNTY RECORDER
2020 Jan 16 12:55 pm FEE 170.00 BY DA
RECORDED FOR AMERICAN FORK CITY

STORM WATER FACILITY AGREEMENT

THIS AGREEMENT, is made and entered into this 30 day of September, 2019, by and between Oakwood Homes (hereinafter referred to as "Owner", and American Fork City (hereinafter referred to as the "City"), a Municipal Corporation. This agreement amends and supersedes the previous agreement which is recorded at the Utah County Recorder's Office as entry 76336:2017 .

RECITALS

WHEREAS, the Owner desires to improve, develop or redevelop real property located at approximately 1288 East 400 North (parcel 41:883:0223) in American Fork City, Utah County, State of Utah (hereinafter referred to as the "Property"), which is more particularly described in Exhibit A attached hereto;

WHEREAS, said development requires the installation and maintenance of storm water facilities (hereinafter referred to as "Facilities") to be constructed according to designs and plans approved by the City;

WHEREAS, the Owner, for and in behalf of its administrators, executors, successors, heirs, or assigns, including any homeowners association, recognizes and agrees that the health, safety, and welfare of the citizens of the City require that the Facilities be constructed and adequately maintained on the Property throughout the life of the development; and

NOW, THEREFORE, in consideration of the foregoing, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

SECTION 1
FACILITIES

Facilities include all storm water detention and control structures, flood control devices, or other improvements, which may include, but is not limited to all pipes, channels, or other structures and infrastructure built to convey storm water to the Facilities, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the storm water which are required by the City in the site plan attached hereto as Exhibit B.

SECTION 2
FACILITIES CONSTRUCTION

The Owner shall, at its sole cost and expense, construct the Facilities in accordance with the plans and specifications for the development approved by the City. Owner understands and agrees that modifications may be needed to make the system work properly after the Facilities are installed and agrees to make modifications and adjustments as may be necessary and required by the City.

Approved as to form:
Attorney for American Fork City

SECTION 3
MAINTENANCE

The Owner shall, at its sole cost and expense, adequately maintain the Facilities in good working condition acceptable to the City and in accordance with the schedule of long term maintenance activities agreed to by the parties and attached hereto as Exhibit C. Adequate maintenance is herein defined as follows: 1) keeping the Facilities in good working condition so that the Facilities are performing their design functions, 2) performing facility inspections and repairs as may be needed, and 3) replacing and/or modifying portions, or all of the system, as may be needed to maintain the intended function of the facility.

SECTION 4
EASEMENT

The Owner hereby grants permission to the City, its authorized agents, and employees to enter upon the Property and to inspect the Facilities whenever the City deems it necessary. Whenever possible, the City shall provide notice prior to entry. Inspections by the City shall be conducted in a reasonable manner and at reasonable times, as determined appropriate by the City. The purpose of the inspection shall be to determine and ensure that the Facilities are being adequately maintained, are continuing to perform in an adequate manner, and are in compliance with all laws, regulations, and approved plans and specifications. The Owner hereby grants a twenty-five (25) foot access easement in favor of the City with the midpoint of the easement lying over the midpoint of the Facilities identified in the attached plan. This easement shall be limited in scope to allow only those actions which are necessary to allow the City to inspect, ensure adequate maintenance, and to cause any repairs to be made that the City deems necessary. This easement shall include, but is not be limited to, prohibiting the construction of structures or improvements that would impact or obstruct the intended purposes of the Facilities or restrict the ability of the Owner or the City to inspect, maintain, or repair the Facilities.

SECTION 5
FAILURE TO MAINTAIN FACILITIES

In the event the Owner fails to maintain the Facilities in good working order acceptable to the City and in accordance with the maintenance schedule incorporated in this Agreement, the City, in addition to any other remedies provided by State or City code, may, with due notice as provided in Section 6, enter the property and take whatever steps it deems necessary to return the Facilities to good working order. This provision shall not be construed to allow the City to erect any structure of a permanent nature on the property that is not included in the plans and specifications for the development, or other agreement between the parties. It is expressly understood and agreed that the City is under no obligation to maintain or repair the Facilities. The decision to maintain or repair the Facilities shall be at the City's sole discretion and in no event shall this Agreement be construed to impose any such obligation on the City or to create any liability for the City refusing to undertake such a duty.

SECTION 6
NOTICE OF DEFICIENCIES

If the City finds that the Facilities contain any defects or are not being maintained adequately, the City shall provide Owner written notice of the defects or deficiencies and provide Owner with a reasonable time, as determined by the City, to cure such defects or deficiencies.

SECTION 7
RECOUPMENT OF COSTS

In the event the City performs work of any nature pursuant to the Agreement, or expends any funds in the performance of said work for labor, use of equipment, supplies, materials, and the like, the Owner shall reimburse the City within thirty (30) days of receipt thereof for all the costs incurred by the City. If not paid within the prescribed time period, the City shall be entitled to record a lien against the real property in the amount of such costs. The actions described in this section are in addition to and not in lieu of any and all legal remedies available to the City as a result of the Owner's failure to maintain the Facilities.

SECTION 8
LIMITATION OF LIABILITIES

It is the sole intent of this Agreement to insure the proper construction and maintenance of the Facilities by the Owner. As the Facilities are not part of the City's Storm Water Collection System, this agreement does not create or extend any rights to immunity or liability protections provided by law to municipalities. This Agreement shall not be deemed to create or affect any additional liability of any party for damage alleged to result from or caused by storm water runoff, or to constitute a waiver of any immunity provided to the City through the Utah State Code or Constitution.

SECTION 9
SEDIMENT ACCUMULATION

Adequate maintenance shall include control of sediment accumulation resulting from the normal operation of the Facilities. The Owner will make accommodations for the removal and appropriate disposal of all accumulated sediments.

SECTION 10
REQUIREMENTS AND STANDARDS

The Parties agree to follow and comply with all requirements applicable to storm water detention and control facilities as by the Utah Department of Environmental Quality, Division of Water Quality, including the Small MS4 General UPDES Permit requirements, and by the City ordinances and Storm Water Management Plan as existing at the time of executing this agreement and as may be amended from time to time. The parties agree that these requirements and regulations are incorporated herein by this reference and that this agreement shall be deemed

automatically amended to incorporate any and all changes and amendments made thereto after the signing of this agreement.

SECTION 11
INSPECTIONS

The Owner shall perform an annual inspection of the Facilities. The City may require more frequent inspections should it have reason to believe that such inspections are necessary. All inspections shall be conducted by a qualified inspector and the results shall be reported to the City. The purpose of the inspection and reporting is to assure safe and proper functioning of the Facilities, including but not limited to, the structural improvements, berms, outlet structure, pond areas, access roads, vegetation, landscaping, etc. All annual inspection reports shall be submitted to the City Public Works Department no later than September 1 of any given year and shall be on the Maintenance Inspection Report attached hereto as Exhibit D.

SECTION 12
INDEMNITY

The Owner indemnifies and holds harmless the City and its authorized agents and employees for any and all damages, accidents, casualties, occurrences or claims which might arise or be asserted against the City from the construction, presence, existence or maintenance of the facility or facilities by the Owner. In the event a claim is asserted against the City, its authorized agents or employees, the City shall promptly notify the Owner and the Owner shall defend at its own expense any suit based on such claim. If any judgment or claims against the City, its authorized agents or employees shall be allowed, the Owner shall pay for all costs and expenses in connection herewith.

SECTION 13
COVENANT RUNNING WITH THE LAND

This Agreement shall be recorded at the Utah County Recorder's Office and shall constitute a covenant running with the land and shall be binding on the Owner, its administrators, executors, heirs, assigns and any other successors in interest, including any homeowners association.

SECTION 14
REMEDIES

This Agreement may be enforced by proceedings at law or in equity by or against the parties hereto and their respective successors in interest. Any rights or remedies contained in this Agreement shall be in addition, and non-exclusive, to any rights existing under the Utah Code or that may exist under the common law.

SECTION 15
ATTORNEYS FEES

If any party retains, consults, or uses an attorney because of any breach, default, or failure to perform as required by this Agreement, the non-breaching/defaulting party shall be entitled to reasonable attorney's fees incurred before litigation is filed. In the event that any litigation is commenced to enforce or interpret this Agreement the prevailing party shall be entitled to its attorneys fees, expert witness expenses, and litigation related expenses, including but not limited to court costs.

SECTION 16
THIRD PARTY BENEFICIARIES

This Agreement shall be binding upon and inure solely to the benefit of the parties herein and is not intended to create contractual rights in any third party.

SECTION 17
NO PARTNERSHIP

Nothing contained in this Agreement shall be deemed to create any form of a partnership or joint-venture between the City and Owner.

SECTION 18
UTAH LAW AND VENUE

This Agreement shall be interpreted pursuant to the laws of the State of Utah. Any and all suits for any claims or for any and every breach or dispute arising out of this Agreement shall be maintained in the appropriate court of competent jurisdiction in Utah County, Utah.

SECTION 19
INTEGRATED AGREEMENT

This Agreement sets forth the entire agreement of the parties and supersedes all prior agreements, whether written or oral, that exists between the parties regarding the subject matter of this Agreement.

SECTION 20
SEVERABILITY

The provisions of this agreement shall be severable and if any phrase, clause, sentence or provision is declared unconstitutional, or the applicability thereof to the, its successors and assigns, is held invalid, the remainder of this Covenant shall not be affected thereby.

SECTION 21
AMENDMENTS

Except as expressly provided elsewhere in this Agreement, no provision of this Agreement may not be modified except in writing agreed to by both parties.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the dates set forth below.

OWNER

Date: September 30, 2019.

By: Ryan Smith
Its: Division President

NOTARIZATION

STATE OF UTAH)
) :ss
COUNTY OF UTAH)

The above Agreement was executed on this 30th day of September, 2019 by Ryan Smith, for and on behalf of Oakwood Homes of Utah, LLC, the Owner identified in the above signed Agreement. In executing this Agreement, the signer did swear before me that he is duly authorized to sign the agreement on behalf of the Owner.

RACHEL MARIETTA MORRIS
NOTARY PUBLIC-STATE OF UTAH
COMMISSION# 699798
COMM. EXP. 04-02-2022

Rachel Marietta Morris
NOTARY PUBLIC

AMERICAN FORK CITY

Date: October 28, 2019.

Scott Sensanbaugher
Director of Public Works

ATTEST:

Jerilyn Ruker

AMERICAN FORK CITY CORPORATE SEAL UTAH COUNTY STATE OF UTAH

Approved as to form:
Attorney for American Fork City

Exhibit A

All of Hansen Ranch Subdivision Phase 1, Hansen Ranch Subdivision Phase 2, Hansen Ranch Subdivision Phase 3, Hansen Ranch Subdivision Phase 4 and Parcels 14:018:0161, 14:018:0175, 14:018:0163, 14:018:0165 and 14:018:0158.

Lots 101 through 111, Hansen Ranch Phase I
Lots 201 through 222, Hansen Ranch Phase 2
Parcels A and B, Hansen Ranch Phase 2
Lots 300 through 334, Hansen Ranch Phase 3

Tax ID # 14:018:0161
COM N 801.8 FT & E 1188.51 FT FR W 1/4 COR. SEC. 18, T5S, R2E, SLB&M.; N 0 DEG 10' 3" W 301 FT; E 987.76 FT; S 0 DEG 12' 21" E 272.51 FT; S 89 DEG 47' 39" W 814.94 FT; N 89 DEG 54' 55" W 64 FT; S 0 DEG 5' 5" W 25.66 FT; W 108.89 FT TO BEG. AREA 6.279 AC.

Tax ID# 14:018:0175
COM N 801.8 FT & E 2180.39 FT & N 28.54 FT FR W 1/4 COR. SEC. 18, T5S, R2E, SLB&M.; N 272.48 FT; W 4.98 FT; N 0 DEG 12' 21" W 34.12 FT; N 89 DEG 38' 0" E 19.35 FT; ALONG A CURVE TO L (CHORD BEARS: S 1 DEG 48' 39" E 15.96 FT, RADIUS = 60 FT); ALONG A CURVE TO R (CHORD BEARS: S 4 DEG 49' 46" E 2.42 FT, RADIUS = 15 FT); S 0 DEG 12' 21" E 89.31 FT; ALONG A CURVE TO R (CHORD BEARS: S 44 DEG 47' 39" W 21.21 FT, RADIUS = 15 FT); S 0 DEG 12' 21" E 64 FT; ALONG A CURVE TO R (CHORD BEARS: S 45 DEG 12' 21" E 21.21 FT, RADIUS = 15 FT); S 0 DEG 12' 21" E 105.01 FT; S 89 DEG 47' 39" W 16 FT TO BEG. AREA 0.088 AC.

Tax ID# 14:018:0163
COM N 801.8 FT & E 1172.2 FT & N 321 FT & E 15.37 FT FR W 1/4 COR. SEC. 18, T5S, R2E, SLB&M.; N 0 DEG 10' 3" W 7.8 FT; N 89 DEG 38' 0" E 987.76 FT; S 0 DEG 12' 21" E 34.12 FT; W 84.41 FT; N 20 FT; W 903.43 FT TO BEG. AREA 0.287 AC.

Tax ID# 14:018:0165
COM N 801.8 FT & E 1182.75 FT FR W 1/4 COR. SEC. 18, T5S, R2E, SLB&M.; E 114.67 FT; S 0 DEG 5' 5" W 12.66 FT; N 89 DEG 54' 55" W 114.52 FT; N 0 DEG 34' 57" W 12.49 FT TO BEG. AREA 0.033 AC.

Tax ID# 14:018:0158
COM N 801.8 FT & E 1172.2 FT & N 321 FT & E 15.37 FT FR W 1/4 COR. SEC. 18, T5S, R2E, SLB&M.; E 903.43 FT; S 20 FT; W 903.38 FT; N 0 DEG 10' 3" W 20 FT TO BEG. AREA 0.415 AC.

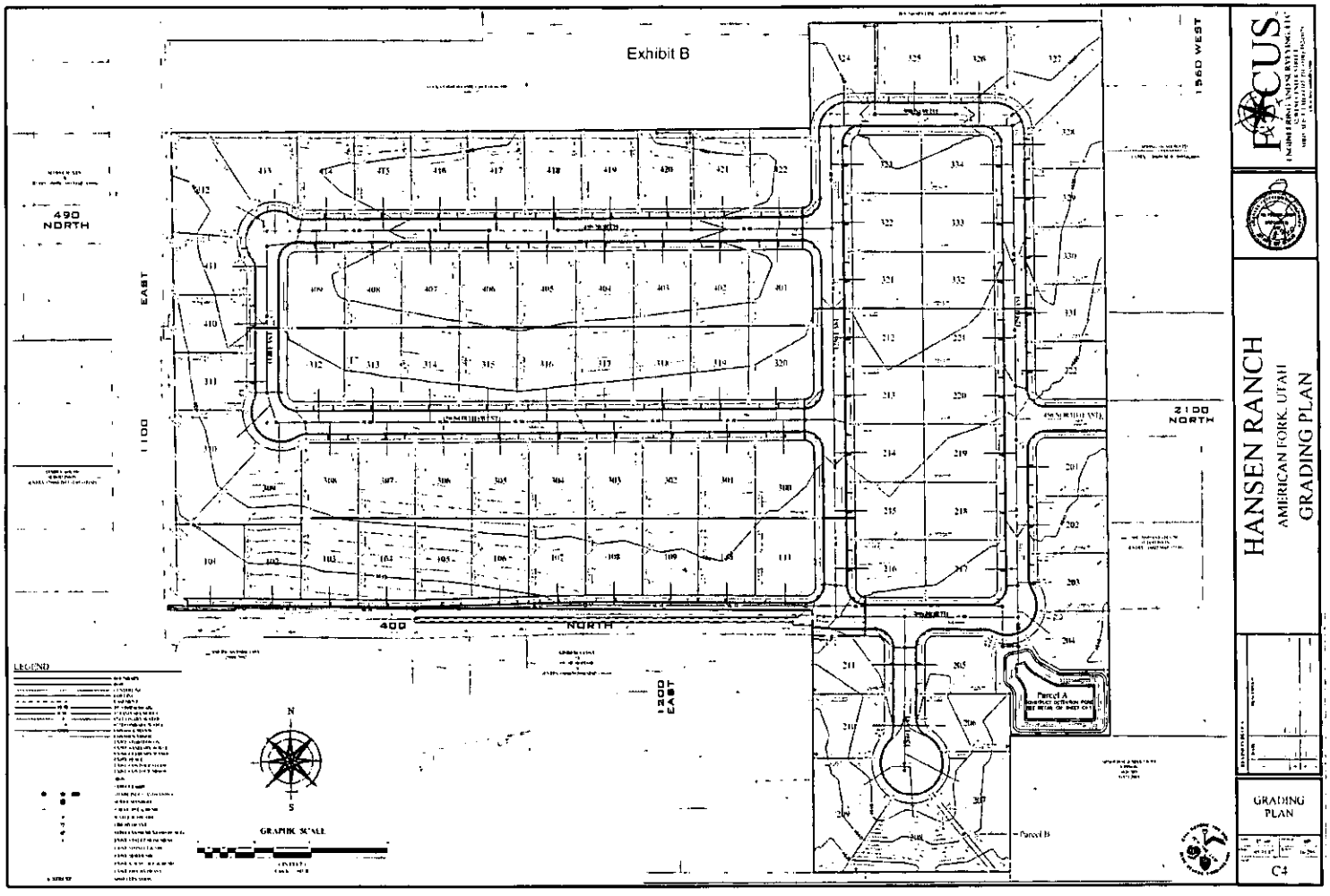
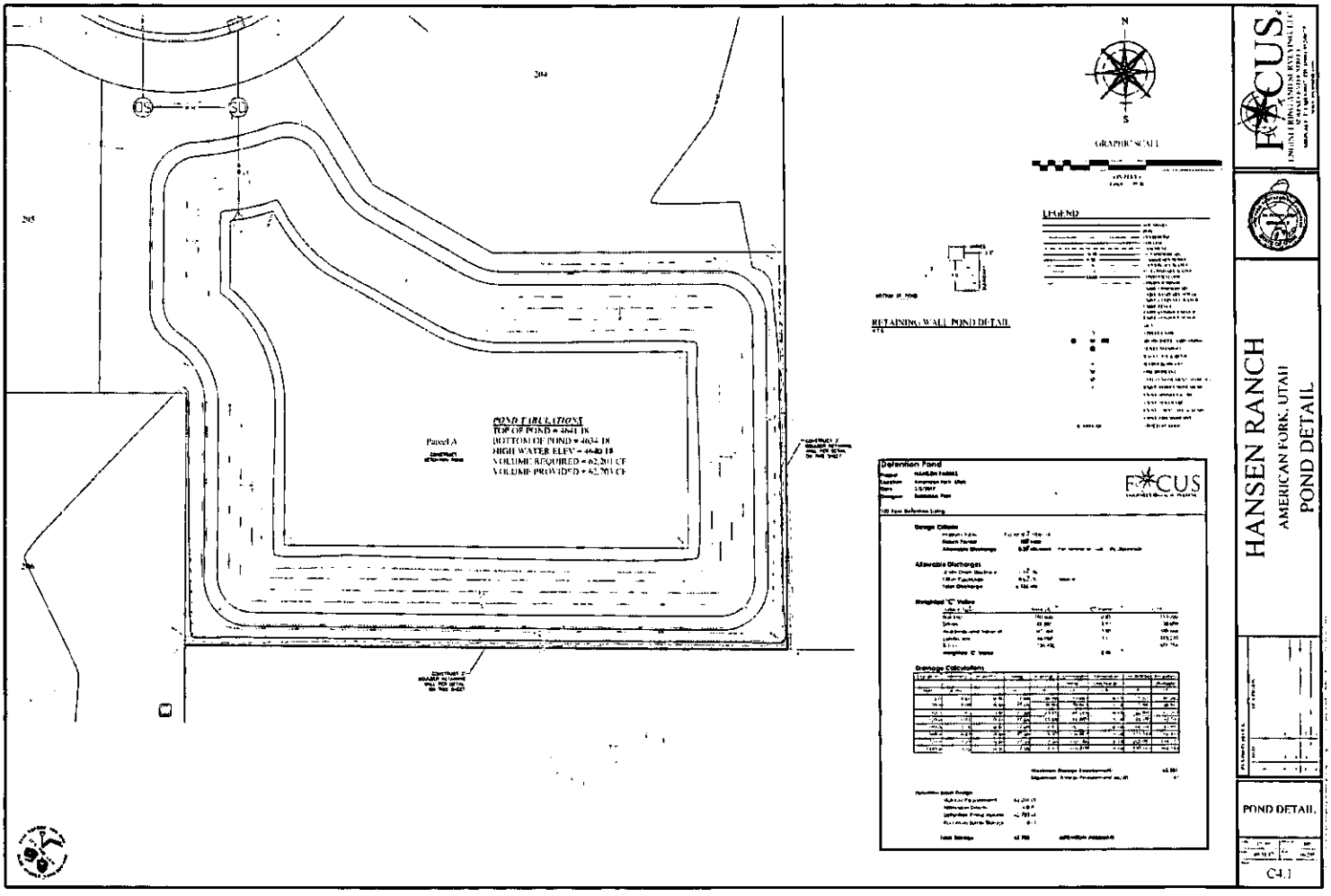
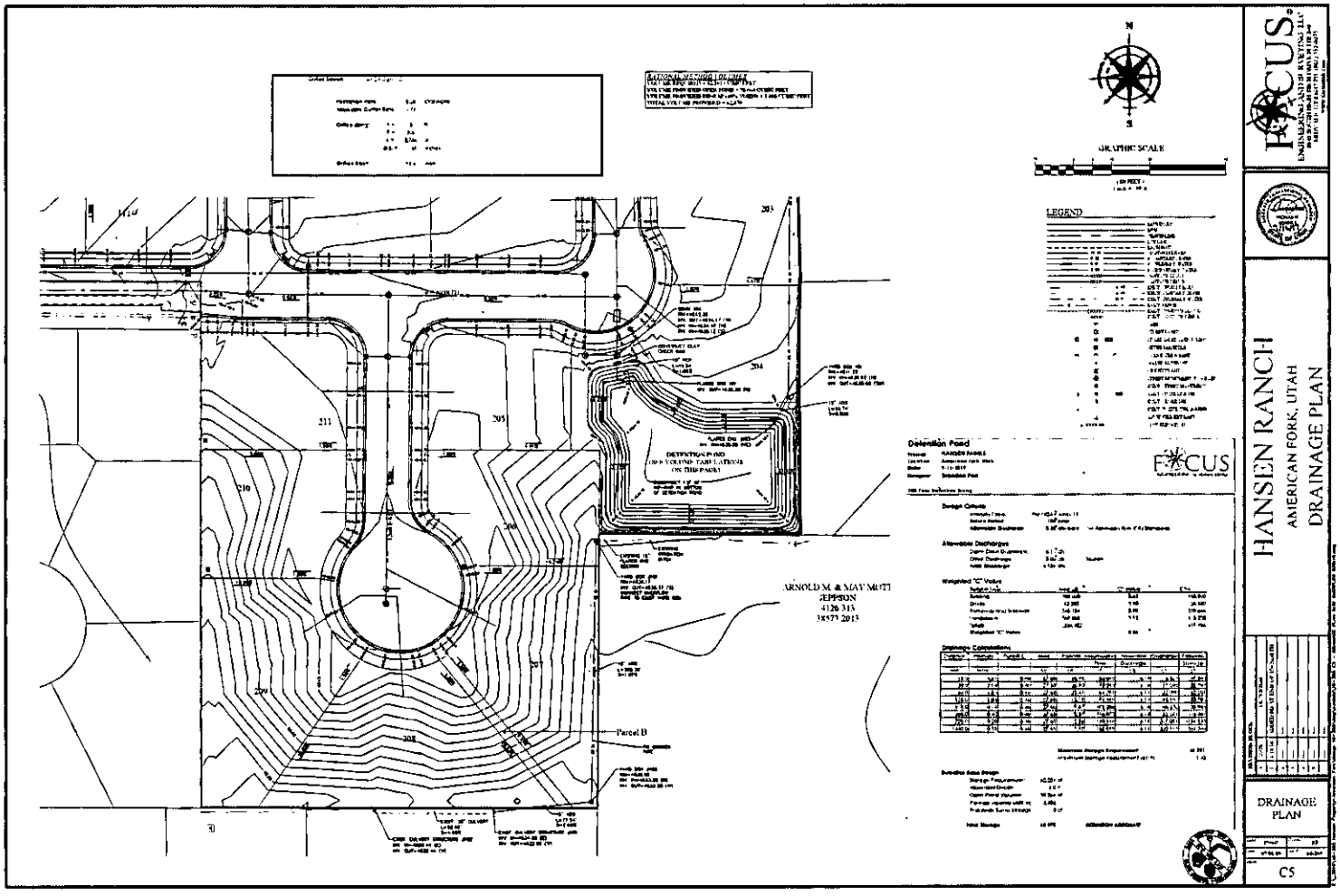


Exhibit B
490 NORTH
1100 EAST
400 NORTH
1800 EAST
1560 WEST
2100 NORTH
LEGEND
GRAPHIC SCALE
Parcel A
Parcel B
FOCUS
HANSEN RANCH
AMERICAN FORK, UTAH
GRADING PLAN
GRADING PLAN
C4


POND CALCULATIONS
TOP OF POND = 4643.0ft
BOTTOM OF POND = 4634.0ft
HIGH WATER ELEV = 4640.0ft
VOLUME REQUIRED = 62,201 CF
VOLUME PROVIDED = 62,203 CF
Parcel A
GRAPHIC SCALE
LEGEND
RETAINING WALL POND DETAIL
Detention Pond
FOCUS
HANSEN RANCH
AMERICAN FORK, UTAH
POND DETAIL
POND DETAIL
C4.1


GRAPHIC SCALE
LEGEND
Detention Pond
ARNOLD M. & MAY MOTT
JEPPSON
4126 315
10/5/71 2013
Parcel B
HANSEN RANCH
AMERICAN FORK, UTAH
DRAINAGE PLAN
DRAINAGE PLAN
C5

HANSEN ALLEN & LUCE inc
ENGINEERS

MEMORANDUM

PROFESSIONAL ENGINEER
No. 165467-2202
GREGORY J. POOLE
STATE OF UTAH

DATE: May 29, 2019
TO: Thomas Romney, P.E.
Focus Engineering and Surveying, LLC

FROM: Greg Poole, P.E.
Hansen, Allen & Luce, Inc. (HAL)
859 West So. Jordan Pkwy – Suite 200
South Jordan, Utah 84095

SUBJECT: Hansen Ranch – 400 North Storm Drain Hydraulics

PROJECT NO.: 413.07.100

INTRODUCTION

Hansen, Allen, and Luce, Inc. was requested to complete a hydraulic evaluation of the Hansen Ranch detention basin outlet storm drain (400 North, see Figure 1) addressing the effects of the following.

- Base flow from irrigation and/or groundwater inflow.
- Profile of the as constructed storm drain in 400 North.

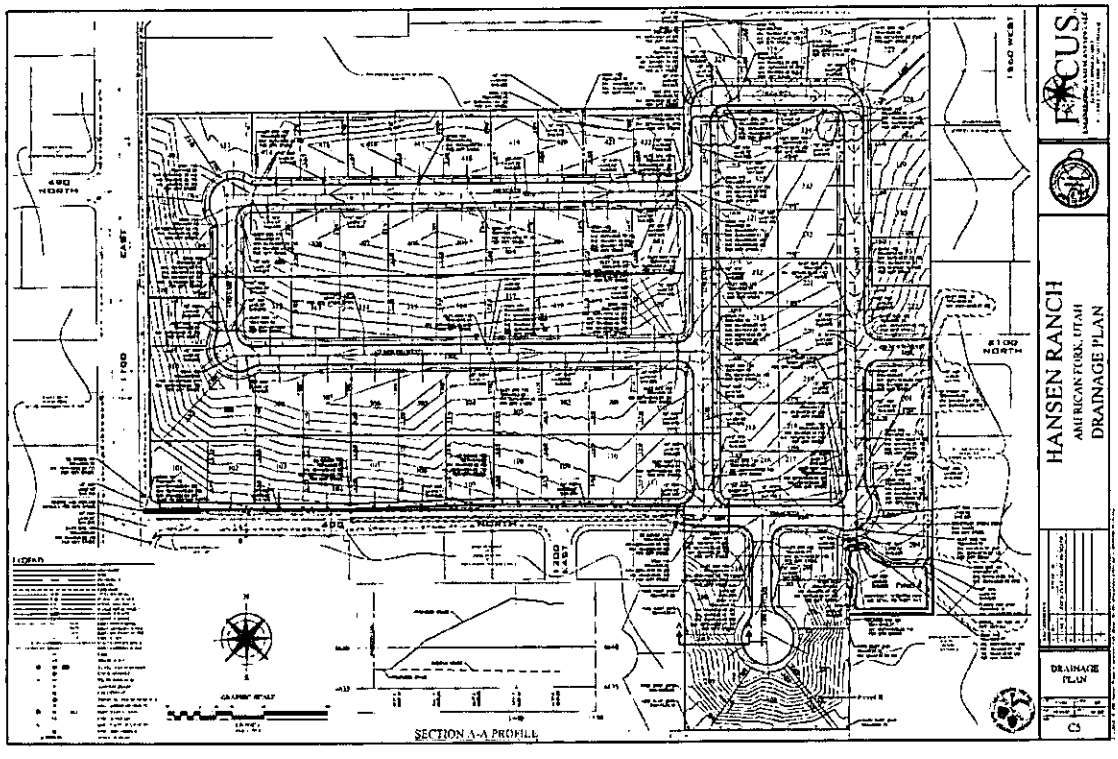
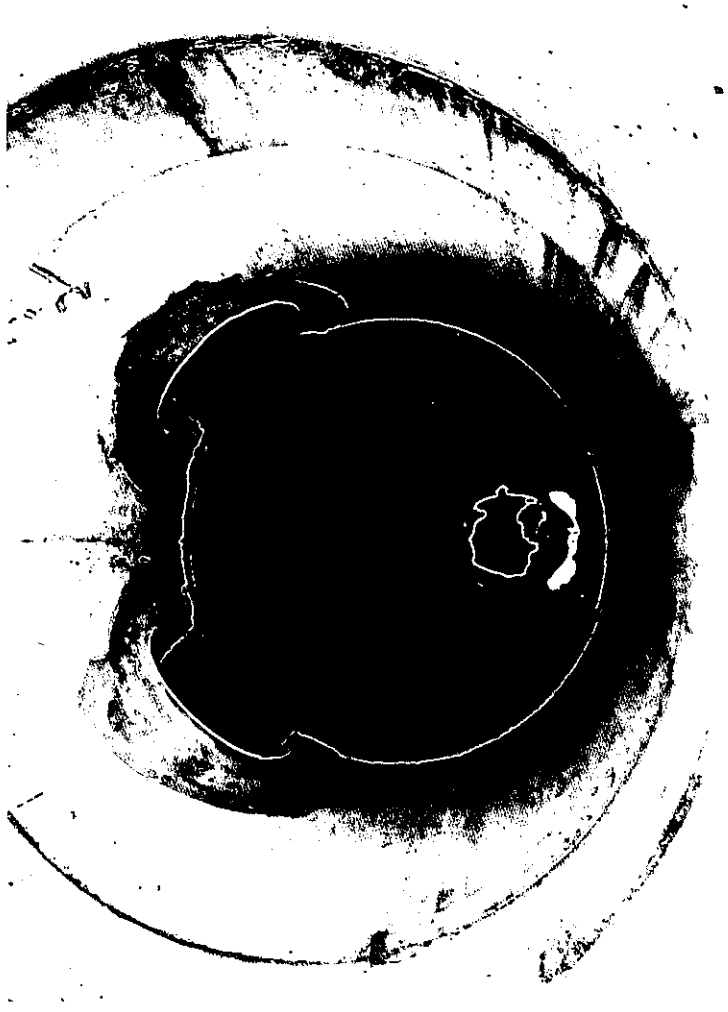


FIGURE 1 – HANSEN RANCH – 400 NORTH STORM DRAIN

The base flow in the 400 North storm drain was measured on May 13th and found to be about 0.1 cfs (at Sta 19+73 SD Combo 104). Flow in SDMH 102 is shown in Photo 1. The depth of the high water marks shown in the photo is estimated at 0.7 feet.



The following information and/or assumptions were made in the analysis.

- The 400 North storm drain connects to a 24-inch diameter storm drain in 1100 East which has a 1.35% slope.
- Boundary condition in the 1100 East storm drain is assumed to be normal depth (24" diameter at 1.35% slope). Normal depth with 7 cfs = 0.71 feet.
- The discharge from the detention basin is assumed to be 6 cfs.
- Irrigation/ground water base flow in the 400 North storm drain is assumed to be 1 cfs maximum (based on the high water marks in SDMH 102).
- 400 North storm drain elevation data from drawings provided by Focus Engineering.

HYDRAULICS

Hydraulic computations were completed for the 400 North storm drain with two methods: EPA SWMM (after AutoDesk SSA) and FHWA HEC-22. The SWMM model junction loss coefficients were calibrated based on the HEC-22 methodology.

The predicted hydraulic grade line for the 400 North storm drain is shown in Figure 2.

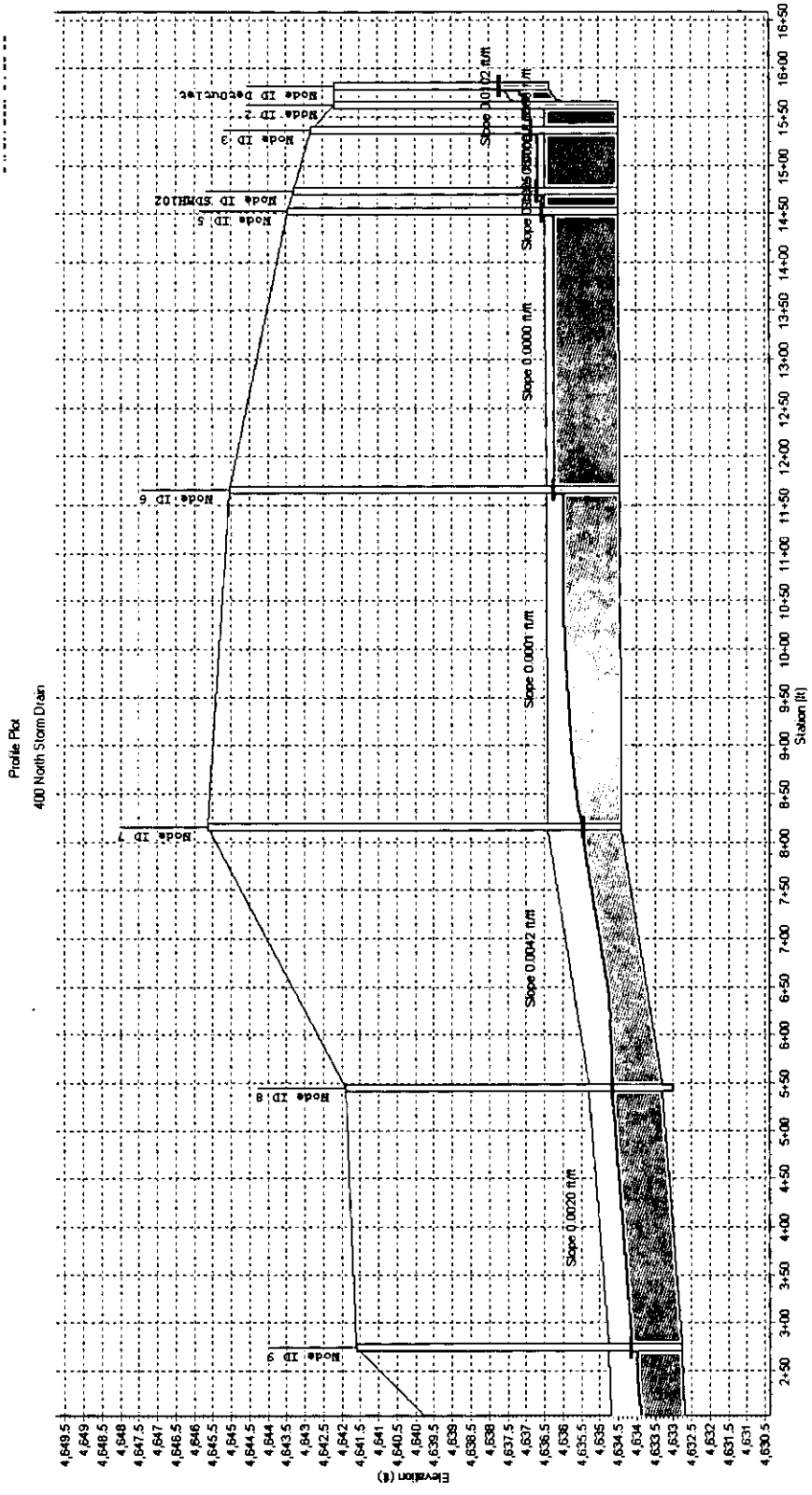


FIGURE 2 – 400 NORTH – STORM DRAIN PREDICTED HYDRAULIC GRADELINE (7 CFS)

The predicted headwater depth at the detention basin outlet to introduce 6 cfs into the storm drain is 1.7 feet assuming 6 cfs from the detention basin and 1 cfs base flow.

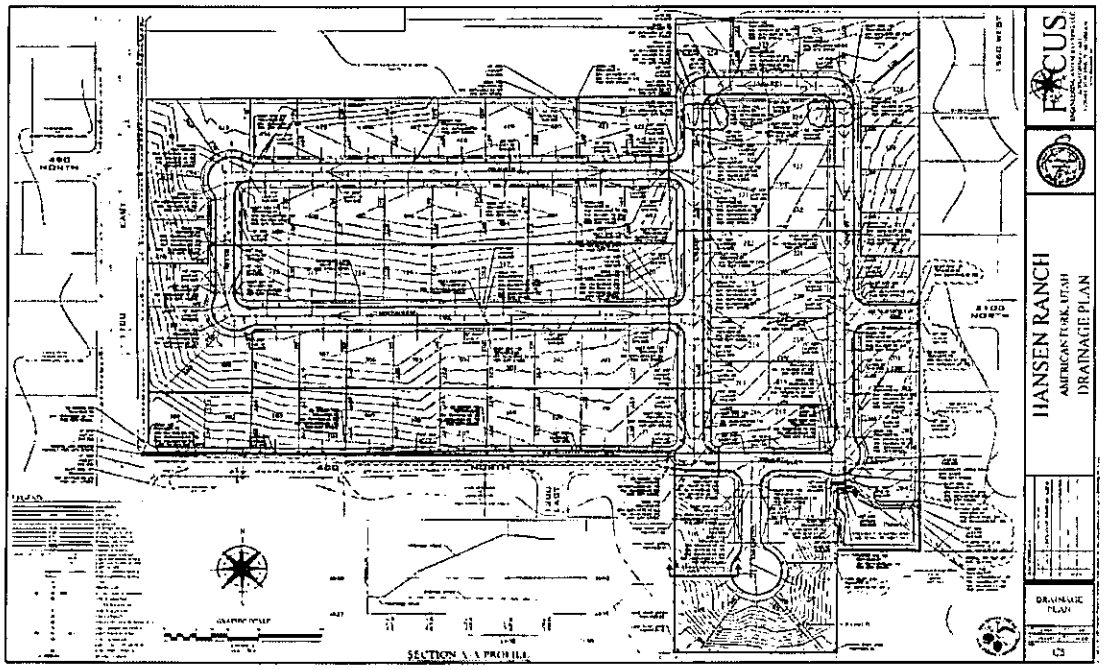
Computation sheets with HEC-22 storm drain hydraulics methodology are attached.

CLIENT: Focus Engineering, Inc.
PROJECT: Hansen Ranch
FEATURE: Final Hydraulic Analysis
PROJECT NO: 413.07.100

SHEET __1__ OF __3___
COMPUTED DRJ
CHECKED GJP
DATE 05/29/19

Description of project

Hansen Ranch - 400 North storm drain



Reference: HEC-22 2009 Energy Gradeline Computations

Table A (see Sheet 2) Conveyance Hydraulics
Table B (see Sheet 3) Access Hole Energy Losses

Findings:

Assuming a 1 cfs base flow entering at SDMH 102 and 6 cfs entering at the detention basin outlet, the predicted EGL at the detention basin is 4638.0 feet.
About 1.7 feet HW at the 15" pipe entrance.

CLIENT Focus Engineering, Inc.
PROJECT Hansen Ranch
FEATURE Final Hydraulic Analysis
PROJECT NO 413.07.100

SHEET 2 OF 3
COMPUTED DRJ
CHECKED GJP
DATE 5/29/2019

TABLE A CONVEYANCE HYDRAULICS

Struct.	Struct. ID	STA.	Invert FL Elev. (ft)	Pipe Diameter D (ft)	Flowable Area A (ft^2)	Wetted Perimeter P (ft)	Assigned Flow Q (cfs)	Length L (ft)	Full Pipe Velocity V (fps) full flow	Velocity Head H_v (ft)	Mannings n	conveyance	Friction Slope Sf (ft/ft)	Total Pipe Loss	EGLi (ft)	EGLo (ft)	Surf Elev (ft)	Freeboard (ft)	*Open Channel check $Y_{critical}$ (ft)	H_{vc} (ft)	Slope S_o (ft/ft)
MH	11		4631.85	2	3.14	6.28	7	0	2.23	0.08	0.013	226.8	0.0010		4632.56	4632.56			0.94		
MH	11	0	4631.85	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4632.56	4638.6	5.39			
Pipe	11-10	58.41		2	3.14	6.28	7	58.41	2.23	0.08	0.013	226.8	0.0010	0.06	4634.11				0.94	0.36	0.0135
MH	10	58.41	4632.64	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4634.19	4638.64	4.47			
Pipe	10-9	116.31		2	3.14	6.28	7	116.31	2.23	0.08	0.013	226.8	0.0010	0.11	4634.30				0.94	0.36	0.0009
MH	9	174.72	4632.75	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4634.33	4641.62	7.30			
Pipe	9-8	270.10		2	3.14	6.28	7	270.1	2.23	0.08	0.013	226.8	0.0010	0.25	4634.59				0.94	0.36	0.0010
MH	8	444.82	4633.02	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4634.62	4641.89	7.29			
Pipe	8-7	270.20		2	3.14	6.28	7	270.2	2.23	0.08	0.013	226.8	0.0010	0.26	4635.89				0.94	0.36	0.0052
MH	7	715.02	4634.42	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4635.92	4645.63	9.73			
Squash	7-6	350.50		2	3.14	6.28	7	350.5	2.23	0.08	0.013	226.8	0.0010	0.33	4636.25				0.94	0.36	0.0001
MH	6	1065.52	4634.45	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4636.28	4645.05	8.78			
Squash	6-5	287.50		2	3.14	6.28	7	287.5	2.23	0.08	0.013	226.8	0.0010	0.27	4636.56				0.94	0.36	0.0000
MH	5	1353.02	4634.46	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4636.59	4643.46	6.89			
Squash	5-4	21.10		2	3.14	6.28	7	21.1	2.23	0.08	0.013	226.8	0.0010	0.02	4636.61				0.94	0.36	0.0005
MH	4	1374.12	4634.47	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4636.69	4643.28	6.61			
Pipe	4-3	62.60		2	3.14	6.28	7	62.6	2.23	0.08	0.013	226.8	0.0010	0.06	4636.75				0.94	0.36	0.0000
MH	3	1436.72	4634.47	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4636.83	4642.83	6.02			
Pipe	3-2	25.00		2	3.14	6.28	7	25	2.23	0.08	0.013	226.8	0.0010	0.02	4636.85				0.94	0.36	0.0000
MH	2	1461.72	4634.47	2	3.14	6.28	7		2.23	0.08	0.013	226.8	0.0010			4636.99	4642.17	5.25			
Pipe	2-1	19.50		1.25	1.23	3.93	6	19.5	4.89	0.37	0.013	64.8	0.0086	0.17	4637.45				0.99	0.51	0.0954
MH	1	1481.22	4636.33	1.25	1.23	3.93	6		4.89	0.37	0.013	64.8	0.0086			4638.01	4643.33	5.32			

CLIENT Focus Engineering Inc. SHEET 1 OF 3
PROJECT Hansen Ranch COMPUTED DRJ
FEATURE EGL Calcs CHECKED GJP
PROJECT NO 413.07.100 ACCESS HOLE ENERGY LOSSES $E_a = E_{ai} + H_e + H_i$ theta - Hp, if Ea is computed to be less than the outflow energy head (E0), then Ea should be 1 DATE 5/29/2019

1.00	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
				Z_k	STEP 1 Establish Access Hole Energy Level)								STEP 2	Adjustments for Benching, Angled inflow, and Plunging Inflow										Total Adjust						INLET PIPE OUTLET LOSS			
					E_i = EGLi - Z_i	OUTLET CONTROL		CHECK INLET CONTROL					BENCHING			ANGLED INFLOW				PLUNGING INFLOW									Main Line		Ho	
Struct. ID	STA	Do	Qo	Z_k		K_i	$H = K_i * H_v$	E_{ae}	Di	E_{ae}	E_{au}	E_a	FLOOR	Ea/Do	CB	Number of	Sum Q_i	θ_W	C_p	Z_k	h_i	Q_k	E_{ap}	H_e	E_a	EGLa	Surf	Freeboard	Plunging?	K_o	K_o*H_v	EGL$_o$
		(ft)	(cfs)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	shape			Inflow Pipes	(cfs)	degrees		(ft)			(ft)	(ft)		Elev (ft)	(ft)	(y/n)			
11	0	2	7	4631.85	0.71	0.20	0.02	0.73	0.28	0.15	1.36	1.36	Depressed	0.68	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	1.36	4633.21	4638.6	5.39	n	0	0.00	4633.21
10	58.41	2	7	4632.64	1.47	0.20	0.02	1.48	0.28	0.15	1.36	1.48	Depressed	0.74	0	1	7	90.0	3.18	0	0.00	0.00	0.00	0.05	1.53	4634.17	4638.64	4.47	n	0.2	0.02	4634.19
9	174.72	2	7	4632.75	1.55	0.20	0.02	1.57	0.28	0.15	1.36	1.57	Depressed	0.78	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	1.57	4634.32	4641.62	7.30	n	0.2	0.02	4634.33
8	444.82	2	7	4633.02	1.57	0.20	0.02	1.58	0.28	0.15	1.36	1.58	Depressed	0.79	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	1.58	4634.60	4641.89	7.29	n	0.2	0.02	4634.62
7	715.02	2	7	4634.42	1.47	0.20	0.02	1.48	0.28	0.15	1.36	1.48	Depressed	0.74	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	1.48	4635.90	4645.63	9.73	n	0.2	0.02	4635.92
6	1065.52	2	7	4634.45	1.80	0.20	0.02	1.82	0.28	0.15	1.36	1.82	Depressed	0.91	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	1.82	4636.27	4645.05	8.78	n	0.2	0.02	4636.28
5	1353.02	2	7	4634.46	2.10	0.20	0.02	2.11	0.28	0.15	1.36	2.11	Depressed	1.06	0	1	7	180.0	0.00	0	0.00	0.00	0.00	0.00	2.11	4636.57	4643.46	6.89	n	0.2	0.02	4636.59
4	1374.12	2	7	4634.47	2.14	0.20	0.02	2.16	0.28	0.15	1.36	2.16	Depressed	1.08	0	1	7	90.0	3.18	0	0.00	0.00	0.00	0.05	2.20	4636.67	4643.28	6.61	n	0.2	0.02	4636.69
3	1436.72	2	7	4634.47	2.28	0.20	0.02	2.29	0.28	0.15	1.36	2.29	Depressed	1.15	0	1	7	90.0	3.18	0	0.00	0.00	0.00	0.05	2.34	4636.81	4642.83	6.02	n	0.2	0.02	4636.83
2	1461.72	2	7	4634.47	2.38	0.20	0.02	2.40	0.28	0.15	1.36	2.40	Depressed	1.20	0	2	7	90.0	3.18	0	0.00	0.00	0.00	0.05	2.45	4636.92	4642.17	5.25	n	0.2	0.02	4636.99
1	1481.22	1.25	4	4636.33	1.12	0.20	0.02	1.14	0.27	0.74	1.46	1.66	Depressed	1.34	0	1	4	180.0	0.00	0	0.00	0.00	0.00	0.00	1.66	4638.01	4643.33	5.32	n	0.2	0.00	4638.01

COLUMN EXPLANATORY

1 Structure Identification - Matches Table A
2 STA - Distance along storm drain
3 Do = diameter of downstream pipe
4 Qo = flow in downstream pipe
5 Z_k = FL Elev = Flow Line Elevation of Access Hole
6 E_i = EGLi - Z_i = specific energy in the storm drain just downstream of the access hole
7 Ki = Entrance Loss Coefficient for flow entering the pipe downstream of the access hole
8 He = $K_i * H_v$ = Entrance loss for flow entering the downstream pipe. H_v = Velocity head assuming full flow in the downstream pipe
9 E_{ae} = E_i - He = Outlet Control Energy Level
10 Di = Q/A*(g*Do)^.5 = Discharge Intensity Parameter = ratio of discharge to pipe dimensions
11 E_{au} = Do*(Di)^2 = orifice estimate of energy level. Assumes submerged flow and that the Di < 1.8
12 E_{au} = 1.5*Do*(Di)^0.7 = Unsubmerged estimate of inlet control energy level. Uses weir equation to estimate the energy level.
13 E_a = maximum of E_{ae} E_{au} and E_{ap}
14 CB = Energy loss coefficient for benching, from Table 7-5. A negative value indicates water depth will be reduced rather than increased

Table 7-5 Values for the Coefficient, CB

Flow	Bench Subm.	Bench Unsubmerged*
Flat (level)	-0.05	0.05
Depressed	0	0
Half Benched	-0.05	0.85
Full Benched	-0.25	0.93
Improved	-0.6	0.98

*A bench submerged condition has the properties of (Ea/Do)>2.5 and bench unsubmerged condition has the properties of (Ea/Do)<1.0. Linear interpolation between the two values is used for intermediate values

15 Test for submerged Ea/Do - estimate initially based on Ea/Do then check with Ea/Do
16 Value from Table 7-6
17 Number of inflow pipes to the access hole
18 Sum Qi = sum of inflows to the access hole = Sum Qout
19 Theta W = flow weighted angle = Sum(theta i * Qi)/(Sum(Qi)
Straight pipe Theta = 180 degrees
If all flows are plunging, Theta W is set equal to 180 degrees
20 Cthela = 4.5^(Sum(Ci)/Do)*cos ((ThetaW/2)
Convert degrees to radians by multiplying degrees by pi/180
21 Zk = difference between the access hole invert elevation and the inflow pipe invert elev Limit Zk to 10*Do maximum
22 hi = relative plunge height = (Zk - Eai)/Do, set = 0 for Zk < Eai a
23 Qk = plunge flow -- for multiple inlet pipes that plunge
24 Cp = Sum (Qk/hi)/Qo - sheet set for one plunging flow, if more than add columns
25 He = (Eai - Ei)*(CB + Cthela + Cp), if equation yields a negative set equal to zero
26 Ea = Eai - He = Access Hole Energy Level = specific energy in access hole
27 EGLa = Energy Gradeline in Access Hole (use at water surface in access hole)
28 Surf Elev = ground surface elevation
29 Freeboard = Surf Elev - EGa
30 Is the upstream pipe to be analyzed plunging into the access hole? If yes then treat as outlet pipe
31 Ko = entrance pipe outlet loss coefficient = set to 0.4 based on model studies with a B/D of 4 - conservative for cases where the energy in the inlet pipe is conserved thru the access hole
32 Ho = entrance pipe outlet head loss = Ko x velocity head in entrance pipe
33 EGLo = energy grade line in inlet pipe just upstream of access hole (includes entrance pipe outlet loss)

ACCESS HOLE ENERGY LEVEL DEFINITIONS

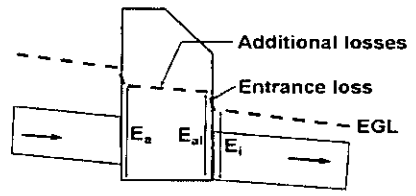


Exhibit C – Long-Term Maintenance Activities

- Detention Basin will be monitored after large storm water events to ensure proper functionality of system.
- Detention Basin will be cleaned as needed after large storm events and at a minimum annually, more frequently if needed, to ensure proper capacity and functionality of system and associated storm drain infrastructure including the Baysaver installed upstream of the detention basin.
- Due to the flatness of some segments of the storm drain pipes downstream of the detention pond, a memo is also attached as part of this agreement indicating full functionality with the existing slopes ensuring it meets design flows.
- The 15" ADS pipe as shown in Exhibit B along the rear of lots 206, 207 and 208 will continue to be privately owned and maintained by the HOA that owns and maintains the detention pond. This pipe will at a minimum be annually inspected, more frequently if needed, to ensure capacity and functionality. Maintenance and repair needs will be completed as needed by the HOA.

Exhibit D

Facility Operation and Maintenance Inspection Report for Storm Drain Facilities

Inspector Name:	.....	Subdivision Name:	.....		
Inspection Date:	.....	Address:	.....		
Frequency of inspection	□ Weekly	□ Monthly	□ Quarterly	□ Annual	

	Item Inspected	Checked		Maintenance		Observations and Remarks
		Yes	No	Req'd	Not Req'd	
	Pond Facilities					
1	Landscaping maintenance					
2	Remove sedimentation					
3	Remove debris					
4	Repair side slopes					
5	Repair rip-rap protection					
6	Repair control structure					
7	Cleaning of outfall					
8	Removal of floatable debris					
9	Maintenance of inlets					
10	Maintenance of outlets					
	Storm drain system					
1	Remove sediment from catch basins					
2	Cleaning storm drain pipes					
3	Maintenance of drainage swales					
4	Remove sediment from manholes					
5	Remove sediment from sumps					
6	Repair oil/ water separator					
7	Repair sand filters					
	Parking lot and roads maintenance					
1	Sweeping of parking lot					
2	Sweeping of streets					
3	Cleaning of garbage enclosure					
4	Cleaning of non-hazardous spills					
5	Managing fertilizer use					
6	Managing pesticide use					
7	Removal of grass after lawn mowing					

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information provided is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

BY: ..... Date: .....
Site Inspector

Approved as to form:
Attorney for American Fork City