

PUBLIC WORKS DEPARTMENT

Engineering Division 303 West Commonwealth Avenue, Fullerton, CA 92832-1775 Telephone: 714-738-6845 Website: <u>www.cityoffullerton.com</u>

MARCH 22, 2024

WELL 7A EQUIPPING PROJECT NO. 53005

ADDENDUM NO. 1

TO: ALL PLAN AND SPECIFICATION HOLDERS

THIS ADDENDUM, AS DESCRIBED BELOW, IS FOR USE OF CONTRACTORS AND SUBCONTRACTORS SUBMITTING BIDS ON THIS PROJECT. ALL BIDDERS SHALL INDICATE ON THE BID PROPOSAL FORM THAT THEY HAVE RECEIVED THIS ADDENDUM.

CHANGES TO THE APPENDIX:

1. Appendix 2 is amended to include the following pages.

END OF ADDENDUM

APPENDIX A DETAILS









LIST OF MATERIALS

Steel valve stem extension

NOTES

(1)

- 1. Refer to the City of Fullerton's Approved Materials List for approved manufacturers and model numbers.
- 2. Provide valve stem extension as required by Engineer.
- 3. Terminate extension 24" to 36" from finished grade.
- 4. No valve stem extension shall be less than 2 feet in length.
- 5. Fabricate extension to field measurement.
- 6. Provide additional locating ring when distance to bottom socket exceeds 5 feet.
- 7. The valve stem extension shall be of solid design, pinned couplers are unacceptable.
- 8. Stem shall not be pinned or attached by any other means to the valve nut.
- 9. See Section 5-10 of these Specifications for painting requirements.

STEEL VALVE STEM EXTENSION





APPENDIX B STRUCTURAL CALCULATIONS WITH GEOTECHNICAL REPORT

Structural Calculations

for

Well 7A Equipping

for

City of Fullerton

October, 2023

Reviewed by Wyatt Dressler

Registered Civil Engineer, P.E.

Designed by

Arief Purnoko

Registered Civil Engineer, P.E. 90759

Hazen and Sawyer

800 West 6th Street Los Angeles, CA 90017 (213) 234- 1080

Job No. 20131-001



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Background

Hazen performed foundation design for sound wall panel enclosure without roofing for City of Fullerton. The soundwall panel is 14 feet high. Design calculations are based on eNoise Control sound wall panel information. Geotechnical information is based on a past geotechical report for City of Fullerton Main Plant PFAS treatment Facility project that was prepared for Tetra Tech, by Leighton Consulting, Inc project No. 12740.003 dated June 24, 2020



AP

City of Fullerton

Sheet No.:	1_ of	Date:	10/11/23
Checked By:	WD	Office:	Los Angeles
Telephone:	213.234.1080		
Job No.:	20131-001		

Design Criteria

Engineer:

Subject:

Design Codes and References

-California Building Code, 2022 Edition

Foundation Sound Panels

-ASCE 7-16 Minimum Design Loads for Buildings and Other Structures -Manual of Steel Construction, LRFD 15th edition -ACI 318-19 Building Code Requirements for Structural Concrete

Material Properties

Concrete (Class A2 min for slab & footings)	f'c	=	4000	psi min. at 28 days
Masonry	f'm	=	2000	psi (NOT USED)
Reinforcing Steel	fy	=	60	ksi (A615 Gr. 60)
Structural Steel	fy	=	50	ksi (A992 for W-Shapes)
	fy	=	36	ksi (A36 for other misc. shapes)
Steel Bolts	fy	=	92	ksi (A325, unless noted otherwise)
Anchor Rod	fy	=	36	ksi (F1554 Gr. 36 anchor bolts)
Special inpection:	Yes			

Soil Properties

Repor	t By:	Leighton	Consult	ng, Inc.			
Projec	t No.:	12740.0	03 ;	Dated:	4-Jun-20		
Mat F	ounda	tion:					
	Allow	vable Bea	ring Pres	sure =		1800 psf (DL + sus	stained LL)
	Allow	vable Bea	ring Pres	sure =		2394 psf (DL + LL	+ Seismic)
	Minin	num Ftg D	epth =			12 in (embedn	nent below lowest final grade)
	Minin	num Ftg V	/idth =			12 in	
	Soil C	Coefficien	of Fricti	on =		0.35	
	Passi	ve Soil Pre	ssure =			390 psf/ft	
	Incre	ase for ac	ditional	foot of depth	=	300 psf, max =	3000 psf
	Incre	ase for ac	ditional	foot of width =	=	<mark>300</mark> psf, max =	3000 psf

<u>Loading</u>

Floor DL	=	5	psf
Floor LL	=	150	psf
Estimated wall weight	=	6	psf (Assumed - 6pcf per eNoise Wall)

Seismic: (parameters based on geotech report or ASCE 7 Hazard Tool)

							,
Latitud	е	=	33.847	1	Ν		
Longitu	de	=	-117.926	61	W		
Site Clo	ass					=	D
Risk Ca	itegor	у				=	III
Seismic	Desig	gn Cate	egory			=	D
I _E	=	1.25	(ASCE 7-	16, '	Table	1.5-2)	
Ss	=	1.525	F_{α}		=	1.000	(per USGS Hazard Map)
S ₁	=	0.538	Fv		=	1.762	(per USGS Hazard Map)
S_{DS}	=	1.017					
S_{D1}	=	0.343					
R	=	2.50	(ASCE 7 -	-16,	Table	12.2-1	Steel Special Cantilever Column Systems)

Wind: (parameters based on geotech report or ASCE 7 Hazard Tool)

Design Wind Speed	=	102	mph
Exposure Category	=	С	
Wind Directional Factor, K _d	=	0.85	
Velocity Pressure Coefficient, Kz	=	0.86	
Topographic Factor, K _{zt}	=	1.00	
Snow:			
Ground Snow Load (p _g)	=	0.00	psf
Exposure	=	С	
Snow Exposure Factor (C _e)	=	0.90	
Thermal Factor (C _t)	=	1.00	
Snow Load Importance Factor (I_s)	=	1.10	



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City of Fullerton Subject: Foundation Sound Panels

Seismic Design Parameters

12740.003

hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low slump concrete can reduce the potential for shrinkage cracking.

Seismic Design Parameters 3.4

Moderate to strong ground shaking due to seismic activity is expected at the site during the life span of the project. The 2019 CBC code-based seismic design parameters are summarized in the table below.

Table 1 – Code-Base	J 2019 CBC	Seismic Desig	gn Parameters
---------------------	------------	---------------	---------------

Categorization/Coefficients	Design Value
Site Latitude	33.8471
Site Longitude	-117.9261
Site Class	D
Mapped Spectral Response Acceleration at 0.2s Period, Ss	1.525g
Mapped Spectral Response Acceleration at 1s Period, St	0.538g
Short Period Site Coefficient at 0.2s Period, Fa	1.0
Long Period Site Coefficient at 1s Period, Fv	1.762 ¹
Adjusted Spectral Response Acceleration at 0.2s Period, $S_{\mbox{\scriptsize MS}}$	1.525g
Adjusted Spectral Response Acceleration at 1s Period, $S_{\mbox{\scriptsize M1}}$	0.948g ¹
Design Spectral Response Acceleration at 0.2s Period, Sps	1.017g
Design Spectral Response Acceleration at 1s Period, Sp1	0.632g ¹
Design Peak Ground Acceleration, PGA _M	0.71g

¹Per Exception 2 in Section 11.4.8 of ASCE 7-16, seismic response coefficient C_S to be determined by Eq. 12.8-2 for values of T \leq 1.5T_s and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for T_L \geq T > 1.5T_s or Eq. 12.8-4 for T > T_L

3.5 Lateral Earth Pressures

Seismic

The following recommendations may be used for design and construction of retaining structures at the site. We recommend that any permanent earth retaining structures be backfilled with onsite or import soil with Expansion Index (EI) of not greater than 50 (per ASTM D 4829).



Site Soil Class: Results:	D - Stiff Soil					
Ss :	1.525	S _{D1} :	N/A			
S1 :	0.538	T _L :	8			
F _a :	1	PGA :	0.649			
F _v :	N/A	PGA M :	0.713			
S _{MS} :	1.525	F _{PGA} :	1.1			
S _{M1} :	N/A	l _e :	1.25			
S _{DS} :	1.017	C _v :	1.405			
Ground motion hazard a	nalysis may be required.	See ASCE/SEI 7-16 S	ection 11.4.8.			
Data Accessed:	Tue Apr 11 20	023				
Date Source:	USGS Seism	USGS Seismic Design Maps				

(Fv use geotech report value)



Engineer: ______ Subject:

City of Fullerton Foundation Sound Panels

Wind Design Parameters



Anaheim, California

92801

ASCE 7 Hazards Report

Standard: ASCE/SEI 7-16 Risk Category: III Soil Class: D - Stiff Soil Latitude: 33.847245 Longitude: -117.926323 Elevation: 146.0106087897934 ft (NAVD 88)





Wind

Results:

100-year MRI	81 Vmph
50-year MRI	76 Vmph
25-year MRI	72 Vmph
10-year MRI	66 Vmph
Wind Speed	101 Vmph

 Data Source:
 ASCE/SEI 7-16, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Se

 Date Accessed:
 Tue Apr 11 2023

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.



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Snow & Rain Design Parameters

Snow

Results:	
Ground Snow Load, p _o :	0 lb/ft ²
Mapped Elevation:	146.0 ft
Data Source:	ASCE/SEI 7-16, Table 7.2-8
Date Accessed:	Tue Apr 11 2023
	Values provided are ground snow loads. In areas designated "case study required," extreme local variations in ground snow loads preclude mapping at this scale. Site-specific case studies are required to establish ground snow loads at elevations not covered.
	Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported 'elevation' and 'mapped elevation' differ significantly from each other.

Rain

Results: 15-minute Precipitation Intensity: 3.06 in./h 60-minute Precipitation Intensity: 1.48 in./h NOAA National Weather Service, Precipitation Frequency Data Server, Atlas 14 (https://www.nws.noaa.gov/oh/hdsc/) Data Source:

Date Accessed:

Tue Apr 11 2023



Engineer: AP

Subject: City of Fullerton

Foundation Sound Panels

SEISMIC BASE SHEAR CALCULATION

Design Parameters & S	Site Coefficients	(ASCE/SEI 7-16)				
**Site Class: Risk Category: Importance, I _e Response Mod, R SDC	= D = III = 1.25 = 2.5 = D	(Sec 11.4.3 & Chapter 20) (Table 1.5-1) (Table 1.5-2) (ASCE 7 -16, Table 12.2-1 Steel Specia	al Cantilever Colum	n Systems)		
$S_s = 1.525$ $S_1 = 0.538$	**F _a = 1.00 F _v = 0.95	 (per Sec 11.4.8, ASCE 7) (per Sec 11.4.8, ASCE 7) 	$S_{MS} = F_a S_s =$ $S_{M1} = F_v S_1 =$	1.525 0.514		
$S_{DS} = 2/3S_{MS} =$ 1.017 $S_{D1} = 2/3S_{M1} =$ 0.343						
** Where Soil Site Class D is selected as a default site class, then F _a shall not be taken less than 1.20 per CBC 1613.2.2						

h _n (ft)	=	16.00	ft	average wall height measured to footing
Ct	=	0.020		(Table 12.8-2)
х	=	0.75		(Table 12.8-2)
$T_a(sec)=C_t(h_n)^x$	=	0.16	sec	(Eqn 12.8-7)
$T_0 = 0.2 * S_{D1} / S_{DS}$	=	0.07	sec	(Sec 11.4.6)
$T_{S} = S_{D1}/S_{DS}$	=	0.337	sec	(Sec 11.4.6)
T _L (sec)	=	8	sec	(Fig. 22-15)

Design Response Spectrum - (when site-specific is not used)

For T < S	< T ₀ S _a = S _{DS} (0.4+0.6T/T ₀)			Eqn (11.4-5)	
For T ₀ S	$< T < T_S$ $S_a = S_{DS} =$	1.017		Sec. 11.4.5, Par	2 Controls for Design Spectral Response, Sds
For T _s S	< T < T _L S _a = S _{D1} /T =			Eqn (11.4-6)	
For T >	T_L $S_a = S_{D1}T_L/T^2 =$			Eqn (11.4-7)	
<u>Calcula</u>	ation of Seismic Response Coe	efficient			
C _s = (S	S _{DS} /(R/I _e))W	0.508	W	Eqn (12.8-2)	Controls for Seismic Coefficient, Cs



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Subject	City of Fullerton								
	Foundation Sour	nd Panels							
Calculation of Seis	mic Response C	Coefficient C	ont'd						
The value of C_s co	mputed in accor	dance with I	Eq. 12.8-2 n	eed not excee	ed the follow	ving:			
$C_{s} = S_{D1}/(T(R/I_{e}));$	for T <t<sub>L</t<sub>	1.607		Eqn (12.8-	3)				
$C_{s} = (S_{D1}T_{L})/(T^{2}(R/$	[′] I _e)); for T>T _L	FALSE		Eqn (12.8-	4)				
C _s shall not be take	en less than								
$C_{s} = 0.044S_{DS}I_{e} > 0$	0.01	0.056		Eqn (12.8-	5)				
In addition, for stru	ctures located w	here S ₁ is e	equal to or g	reater than 0.0	6g, C _s shall	not be le	ess than		
$C_{s} = 0.5S_{1}/(R/I_{e})$				Eqn (12.8-	6)				
Seismic Base She	ar, V = C _s W	0.508	g	Eqn (12.8-	1)	(Streng	gth Desig	n)	
Seismic Load Effect									
$E = E_h + E_v$	Eqn (12.4-1)	←	for use in	load combo 5	in Section	2.3.1 or	Section 2	2.4.1 or 9 ir	Section 2.4.5
$E = E_h - E_v$	Eqn (12.4-2)	←	for use in	load combo 7	in Section	2.3.6 or	load com	ıbo 10 in S	ection 2.4.5
$E_h = \rho Q_E$	Eqn (12.4-3), v	vhere	ρ = 1 Q _E = V or	.0 ← F _P	Redunda	ncy facto	or, as def	ined in Sec	tion 12.3.4
$E_v = 0.2S_{DS}D$	Eqn (12.4-4a),	where D = t	the effect of	dead load					
$E_v = 0.3S_{av}D$	Eqn (12.4-4b), motions use th	where the c e provisions	option to inco of Section	orporate the e 11.9 of ASCE	effects of ve	rtical sei	smic gro	und	
$E_h = \rho Q_E =$		0.508	8 W		(Strength	Design)			
$E_v = 0.2S_{DS}D =$		0.203	3 D		(Strength	Design)			



ENGINEER

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AP SUBJECT City of Fullerton

Foundation Sound Panels

Wind Load MWFRS for Solid Freestanding Walls and Solid Signs

Per ASCE/SEI 7-16, Chapter 26 & 29

Simplified Design Wind Pressures

Mean Wall Height, h	16.00 ft	
Horizontal Dimension of Wall, B	10 ft	
Basic Wind Speed, V	102 mph	(Figure 26.5-1)
Wind Directionality Factor, K _d	0.85	(Table 26.6-1)
Risk Category	III	(Table 1.5-1)
Exposure Category	С	(Section 26.7.3)
Velocity Pressure Exposure Coefficient, K _z	0.86	(Table 26.10-1)
Topographic factor, K _{zt} :		(Figure 26.8-1)
Hill shape	N/A	
Н	<mark>0</mark> ft	
L _h	<mark>0</mark> ft	
Х	<mark>0</mark> ft	
K ₁ =	0.00	
K ₂ =	0.00	
K ₃ =	0.00	
$K_{zt} = (1 + K_1 K_2 K_3)^2$	1.00	(Eqt 26.8-1)
Ground Elevation Factor, K _e	1.0	(Section 26.9)
Gust Effect Factor, G:		(Section 26.11)
Peak factor for back ground response, g _Q	3.4	
Peak factor for wind response, g _v	3.4	
Intensity of turbulence @ height z _{bar} , I _{zbar} :		
Turbulence intensity factor, c	0.20	(Table 26.11-1)
Minimum height, z _{min}	15 ft	(Table 26.11-1)
Equivalent height of sturcture, z _{bar} = 0.6h > z _{min} =	15 ft	
$I_{zbar} = c(33/z_{bar})^{(1/6)} =$	0.23	(Eqt 26.11-7)
Background response, Q :		
Integral length scale power law exponent, $\in_{\sf bar}$	0.20	(Table 26.11-1)
Integral length scale factor, /	500	(Table 26.11-1)
Intergral length scale of turbulence @ z_{bar} , L_{zbar} = $\ell(z_{bar}/33)^{\in bar}$	427 ft	(Eqt 26.11-9)
Q = sqrt(1/{1+0.63[(B+h)/L _{zbar})] ^{0.63})}	0.95	(Eqt 26.11-8)
G = 0.925 x [(1 + 0.7 $g_Q I_{zbar} Q) / (1 + 0.7 g_V I_{zbar})]$	0.91	(Eqt 26.11-6, Sec 26.11.4)
Velocity Pressure, q_z = 0.00256 K _h K _{zt} K _d K _e V ²	19.48 psf	(Eqt 26.10-1)
Net Force Coefficient, C _f Case: A	1.45	(Figure 29.3-1)
Design Wind Force, $F = q_h GC_f A_s$	25.67 psf	(Eqt 29.3-1)

where, A_s = gross area of solid freestanding wall/sign



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Hazen

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Company:	Hazen and Sawyer	Page:	1
Address:	800 West 6th Street, Suite 400	Specifier:	Arief Purnoko
Phone I Fax:	213-234-1080	E-Mail:	
Design: Fastening point:	Cantilever Wall	Date:	10/10/2023

Specifier's comments:

1 Input data

Anchor type and diameter:	Heavy Hex Head ASTM F 1554 GR. 36 7/8	Constant Constant of Constant
Item number:		
Effective embedment depth:		
Material:	ASTM F 1554	
Evaluation Service Report:	Hilti Technical Data	
Issued I Valid:	- -	
Proof:	Design Method ACI 318-19 / CIP	
Stand-off installation:	e _b = 0.000 in. (no stand-off); t = 0.750 in.	
Anchor plate ^R :	$\rm I_x~x~I_y~x~t$ = 12.000 in. x 15.000 in. x 0.750 in.; (Recommended plate thickness:	not calculated)
Profile:	W shape (AISC), W8X21; (L x W x T x FT) = 8.280 in. x 5.270 in. x 0.250 in. x	0.400 in.
Base material:	cracked concrete, 4000, f_c = 4,000 psi; h = 24.000 in.	
Reinforcement:	tension: present, shear: not present; anchor reinforcement: tension	See calculation for
	edge reinforcement: > No. 4 bar	tension reinforcement

 $^{\rm R}$ - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [kip, ft.kip]



Input data and results must be checked for conformity with the existing conditions and for plausibility! PROFIS Engineering (c) 2003-2023 Hilti AG, FL-9494 Schaan Hilti is a registered Trademark of Hilti AG, Schaan

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Company:	Hazen and Sawyer	Page:	2					
Address:	800 West 6th Street, Suite 400	Specifier:	Arief Purnoko					
Phone I Fax:	213-234-1080	E-Mail:						
Design:	Cantilever Wall	Date:	10/10/2023					
Fastening point:								
1.1 Design results								

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	$N = 0.000; V_x = 0.000; V_y = 4.000;$	no	94
		$M_x = 35.00000; M_y = 0.00000; M_z = 0.00000;$		

2 Load case/Resulting anchor forces

						○ 3	(\bullet)	○4
Anchor reactio	ns [kip]					0	Tension	0
Tension force: (+Tension, -Compres	ssion)						
Anchor	Tension force	Shear force	Shear force x	Shear force y				
1	0.000	1.000	0.000	1.000				
2	0.000	1.000	0.000	1.000				
3	17.586	1.000	0.000	1.000				
4	17.586	1.000	0.000	1.000				
max. concrete c	ompressive strain:		0.42 [‰]					
max. concrete c	compressive stress:	_	1,846 [psi]			<u> </u>		~ •
resulting tensior	n force in (x/y)=(-0.0	00/5.500):	35.172 [kip]			\bigcirc 1	~	$\bigcirc 2$
resulting compre	ession force in (x/y)	=(-0.000/-6.441 <mark>)</mark> :	35.172 [kip]				(\bullet)	
				Total tensio	on in ^I		Sompression-	
			\sim		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
				anchors				

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N _{ua} [kip]	Capacity ଦ N _n [kip]	Utilization $\beta_N = N_{ua} / \Phi N_n$	Status
Steel Strength*	17.586	20.097	88	OK
Pullout Strength*	17.586	26.611	67	OK
Concrete Breakout Failure** ¹	N/A	N/A	N/A	N/A
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

¹ Tension Anchor Reinforcement has been selected!

3.1 Steel Strength

N _{sa} [kip]	φ	φ N _{sa} [kip]	N _{ua} [kip]
26.796	0.750	20.097	17.586

3.2 Pullout Strength

N _p [kip]	$\Psi_{c,p}$	λ_{a}	φ	φ N _{pn} [kip]	N _{ua} [kip]	
38.016	1.000	1	0.700	26.611	17.586	

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Company.	Hazen and Sawyer	Page.	3
Address:	800 West 6th Street, Suite 400	Specifier:	Arief Purnoko
Phone I Fax:	213-234-1080	E-Mail:	
Design:	Cantilever Wall	Date:	10/10/2023
Fastening point:			

4 Shear load

	Load V _{ua} [kip]	Capacity ଦ V _n [kip]	Utilization $\beta_V = V_{ua} / \Phi V_n$	Status
Steel Strength*	1.000	10.450	10	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	4.000	78.558	6	OK
Concrete edge failure in direction y+**	4.000	13.381	30	OK

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V _{sa} [kip]	φ	♦ V _{sa} [kip]	V _{ua} [kip]
16.078	0.650	10.450	1.000

4.2 Pryout Strength

A _{Nc} [in. ²]	A _{Nc0} [in. ²]	c _{a,min} [in.]	k _{cp}	c _{ac} [in.]	$\Psi_{c,N}$	h _{ef} [in.]
958.75	529.00	10.000	2	∞	1.000	7.667
e _{c1,V} [in.]	$\Psi_{\text{ec1,V}}$	e _{c2,V} [in.]	$\Psi_{ m ec2,V}$	$\psi_{\text{ed},\text{N}}$	k _{cr}	_
0.000	1.000	0.000	1.000	0.961	24	_
λ _a	N _b [kip]	φ	φ V _{cpg} [kip]	V _{ua} [kip]		
1.000	32.222	0.700	78.558	4.000	-	

4.3 Concrete edge failure in direction y+

l _e [in.]	d ₀ [in.]	c ₁ [in.]	A _{vc} [in. ²]	A _{Vc0} [in. ²]	
7.000	0.875	10.000	442.50	450.00	
$\psi_{\text{ed},V}$	$\Psi_{parallel,V}$	e _{c,V} [in.]	$\Psi_{\text{ec,V}}$	$\psi_{\text{c,V}}$	$\psi_{\text{h,V}}$
0.900	1.000	0.000	1.000	1.200	1.000
λ _a	V _b [kip]	φ	φ V _{cbg} [kip]	V _{ua} [kip]	
1.000	18.000	0.700	13.381	4.000	

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status	
0.875	0.299	5/3	94	OK	

 $\beta_{\mathsf{NV}} = \beta_{\mathsf{N}}^{\zeta} + \beta_{\mathsf{V}}^{\zeta} <= 1$

Input data and results must be checked for conformity with the existing conditions and for plausibility! PROFIS Engineering (c) 2003-2023 Hilti AG, FL-9494 Schaan Hilti is a registered Trademark of Hilti AG, Schaan



www.hilti.com

Company:	Hazen and Sawyer	Page:	4
Address:	800 West 6th Street, Suite 400	Specifier:	Arief Purnoko
Phone I Fax:	213-234-1080	E-Mail:	
Design:	Cantilever Wall	Date:	10/10/2023
Fastening point:			

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to https://submittals.us.hilti.com/PROFISAnchorDesignGuide/
- The design of Anchor Reinforcement is beyond the scope of PROFIS Engineering. Refer to ACI 318-19, Section 17.5.2.1 (a) for information about Anchor Reinforcement.
- Anchor Reinforcement has been selected as a design option, calculations should be compared with PROFIS Engineering calculations.

Fastening meets the design criteria!



Hilti PROFIS Engineering 3.0.88

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Company: Address: Phone I Fax: Design: Fastening point:

Hazen and Sawyer 800 West 6th Street, Suite 400 213-234-1080 | Cantilever Wall

Specifier:

Page:

E-Mail:

Date:

5 Arief Purnoko

10/10/2023

7 Installation data

Profile: W shape (AISC), W8X21; (L x W x T x FT) = 8.280 in. x 5.270 in. x 0.250 in. x 0.400 in. Hole diameter in the fixture: $d_f = 0.938$ in. Plate thickness (input): 0.750 in.

Recommended plate thickness: not calculated

Anchor type and diameter: Heavy Hex Head ASTM F 1554 GR. 36 7/8 Item number: not available

Maximum installation torque: -Hole diameter in the base material: - in. Hole depth in the base material: 8.000 in. Minimum thickness of the base material: 9.052 in.

Hilti Heavy Hex Head headed stud anchor with 8 in embedment, 7/8, Steel galvanized, installation per instruction for use



Coordinates Anchor [in.]

х у	C _{-x}	c _{+x}	C_y	c _{+y}
000 -5.500	10.000	19.500	-	21.000
000 -5.500	18.000	11.500	-	21.000
.000 5.500	10.000	19.500	-	10.000
000 5.500	18.000	11.500	-	10.000
	x y 000 -5.500 000 -5.500 000 5.500 000 5.500	x y c.x 000 -5.500 10.000 000 -5.500 18.000 000 5.500 10.000 000 5.500 18.000	x y c.x c+x 000 -5.500 10.000 19.500 000 -5.500 18.000 11.500 000 5.500 10.000 19.500 000 5.500 10.000 19.500 000 5.500 18.000 11.500	x y c.x c+x c.y 000 -5.500 10.000 19.500 - 000 -5.500 18.000 11.500 - 000 5.500 10.000 19.500 - 000 5.500 18.000 11.500 - 000 5.500 18.000 11.500 -

Input data and results must be checked for conformity with the existing conditions and for plausibility! PROFIS Engineering (c) 2003-2023 Hilti AG, FL-9494 Schaan Hilti is a registered Trademark of Hilti AG, Schaan



Engineer:

,Nu

,Vu

Subject:

Sheet No.:	of	 Date:	10/10/23
Checked By:	WD	Office:	Los Angeles
Telephone:	213.234.1080		
_ Job No.:	20131-001		

Loading

Max Uplift Max Shear 35.172 kips

Anchor Reinforcing

Concrete Breakout need reinforcement from HILTI Profis Calculation No shear reinforcment required



5 kips

Tension Reinf

Reinforcement Tension Size	#	3	rebar size		#6 k	bar m	ах			
fc'		4000	psi							
Ld		15	in							
Ldh		12	in							
Total# of Tension, n		5								
Reinforcement Diameter		0.375	in							
Reinforcement area, As		0.11	in ²		pi/4	*d²				
Reinforcement area total, Ast		1.10	in ²		2 leç	g per	tens	sion h	airpin	
Fy		60	ksi							
Ø		0.9								
ØTn		59.641	kip		Øt*F	y*n*/	Ast			
Tu/ØTn	(0.5897	OK	(
				Use		5 -		#	3	Tension Hairpin Reinforcing



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SCALE _ **STABILITY and Reinforcing Design**



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TABILITY and Reinforcing Design			
an annutational model in STAAD to analy	foundation stabil		
se computational model in STAAD to analy	yze loundation stabii	ity and reinforcing.	
ased on geotechnical report:			
ssion spring for foundation subgrade modu	ilus = 115 pcj		
llowable Bearing Capacity = 1,800 psf			
aximum = $3,000$ psf based on foundation of	dimension		
or transient load (wind and seismic) the be	aring pressure can b	be increased by 1.33.	
lax bearing pressure for seismic or wind lo	ading = 1.33* 3000 p	osf = 3990 psf	
Foundation Design Parameters			
The proposed IV and/or CAC vessels and now supply and	wasta tanka may ba		
The proposed IX and/or GAC vessels and new supply and supported on a monolithic mat foundation system. Other app	waste tanks may be		
may be supported on shallow footings.			
3.2.1 Allowable Bearing Capacity			
An allowable bearing capacity of 1,800 psf and a c	coefficient of vertical		
subgrade reaction of 115 pounds per cubic inch (po	ci) may be used for		
foundation design. Mat foundation should have a mini 12 inches below the lowest adjacent grade. Shallow for	mum embedment of		
minimum embedment of 18 inches and a minimum wic	th of 12 inches. For		
shallow footing design, the allowable bearing capacity	may be increased by		
300 psf for each additional foot of embedment depth	or footing width to a		
one third when considering loads of short duration, su	ch as those imposed		
by wind and seismic forces.			
The recommended allowable bearing capacity for	r the foundation is		
generally based on a total allowable static settlem	nent of 1 inch, with		
differential settlement taken as ½ inch over 30 feet.			
	<u></u>		
	*		
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	Leighton		





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SCALE _ Wind Load Wind load = 26 psf Applied as line load on the beam with 8 feet tributary width for interior wall and 4 feet tributary width for corner column (based on drawing layout) . Interior Column Wind load = 26 psf x 8 ft = 208 plf Corner Column wind load = 26 psf x 4 fet = 104 plf



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L	oad combination 1.2D+1W - To check reinforcing		
Ma	x moment on slab and grade beam		
MX (local) kip-ft/R <= -3.5 -3.22			
-2.94 -2.65 -2.37 -2.09			
1.52 1.24 0.954			
0.388 -0.105 0.178 0.461	• • • • • • • • • • • • • • • • • • •		
0.744			
	a a a a a a a a a a a a a a a a a a a		
	a a a a a a a a a a a a a a a a a a a		
	• • • • • • • • • • • • • • • • • • •		
¥× z			
MY (Jocal) kip-ft/ft c=-4.91 -4.57		- 3.	5 kip ft
-4.24 -3.9 -3.56 -3.22			
-2.89 -2.55 -2.21 -1.87 -1.53			
-1.2 -0.859 -0.521 -0.183			
- 0.492	· · · · · · · · · · · · · · · · ·		
	<mark> </mark>	- 0.1	55 kip ft
	• • • • • • • • • • • • • • • • • • •		
		- 4.9	91 kip ft
	• • • • • • • • • • • • • • • • • • •		
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 $A_{s,min} = max(3 psi \times \sqrt{(f_c / 1 psi)}, 200 psi) \times b \times d / f_v = 1.961 in^2$

PASS - Area of reinforcement provided is greater than minimum area of reinforcement required

Minimum area of reinforcement (cl.9.6.1.2)

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Tekla Tedds	Project				Job Ref.				
Hazen and Sawyer	Section				Sheet no./rev. 2				
	Calc. by A	Date 10/29/2023	Chk'd by	Date	App'd by	Date			
Stress block depth factor (cl.22.2.2	2.4.3)	$\beta_1 = \min(\max($	0.85 - 0.05 × (f' _c - 4 ksi) / 1	ksi, 0.65), 0.85) =	0.85			
Depth of equivalent rectangular str	ess block	$a = A_{s,prov} \times f_y$	/(0.85 $ imes$ f'c $ imes$ b) = 1.499 in					
Depth to neutral axis		c = a / β ₁ = 1.764 in							
Net tensile strain in extreme tensio	n fibers	$\epsilon_t = 0.003 \times (d_0 - c) / max(c, 0.001 in) = 0.03548$							
		,	, ()	Net tensile s	train in tension	controlled zone			
Strength reduction factor (cl.21.2.1)	$\phi_f = \min(\max(0))$).65 + 0.25 × (ε _t - ε _{ty}) / (0.00	3), 0.65), 0.9) = 0	.90			
Nominal moment strength	,	$M_n = A_{s,prov} \times f_v$, × (d - a / 2) =	241.606 kip	ft				
Design moment strength		$\phi M_n = M_n \times \phi_f =$	= 217.445 kip	ft	-				
		PASS - Require	ed moment st	renath is les	s than desion m	oment strenath			
					g	j			
Flexural cracking	noion roinf		- 4 042	lin					
Max. center to center spacing of te		$S_{b,max} - S_{bot} + \varphi$	0000 mai)					
Service load stress in reinforcemen	11 (CI.24.3.2)	$I_{s} = 2/3 \times I_{y} = 2$							
Clear cover of reinforcement		$C_c = C_{nom_b} + \phi_v$, = 3.000 in			c) =			
Maximum allowable bot bar spacin	g (Table 24.3.2) PASS - Max	s _{max} = min(15ii simum allowabi	n × 40000psi / le tension rei l	fs - 2.5 × c _c , <i>*</i> nforcement s	l2in × 40000psi / spacing exceeds	t _s) = 7.500 in actual spacing			
Spacing limits for reinforcement									
Top bar clear spacing		s_{top} = (b - (2 \times	$(C_{nom_s} + \phi_{s1_v})$	+ $\phi_{s1_t_L} \times N_s$	₁_t_L1)) / (N₅1_t_L1 -	1) = 4.063 in			
Min. allowable top bar clear spacin	g (cl.25.2.1)	s _{top,min} = 1.000	in						
Bottom bar clear spacing		s_{bot} = (b - (2 ×	$(C_{nom_s} + \phi_{s1_v})$	+ $\phi_{s1_b_{L1}} \times N$	s1_b_L1)) / (Ns1_b_L1	- 1) = 4.063 in			
Min. allowable bottom bar clear spa	acing (cl.25.2.1)) Sbot,min = 1.000 in PASS - Actual bar spacing exceeds minimum allowable							
_ /			1 AGG - Acii		ng exceeds mini				
Rectangular section in shear			_						
Design snear lorce	-	V _u = 4.040 kip	S						
	ſ	$\lambda = 1.00$	(4 . (. (
Size effect factor (cl. 22.5.5.1.3)		$\lambda_{\rm s} = \min(\sqrt{2})$	(1 + (d / 1 in) /	(10)), 1.0) = 0	0.78				
Area of longitudinal reinforcement		A _{st} = 2.209 in ²							
Ratio of longitudinal reinforcement		$\rho_w = A_{st} / (b \times c)$	d) = 0.004		1				
Concrete shear strength (Table 22.	.5.5.1)	φV _c = φ _s × min kips	$(8 imes \lambda_s imes \lambda imes (ho_s))$	ow) ^{1/3} , 5 × λ) ×	√(f' _c × 1 psi) × b >	≪d = 27.166			
Reinforcement shear strength (eqn	. 22.5.1.1)	$\phi V_s = max(V_u \cdot$	- φV _c , 0 kips) =	0.000 kips					
Maximum reinforcement shear stre	ength	$\phi V_{s,max} = \phi_s \times 8$	3 psi × √(min(f	_c , 10000psi) /	1 psi) × b × d = 2	23.225 kips			
Area of design shear reinf. reqd (ed	qn. 22.5.8.5.3)	$A_{sv,des} = \phi V_s / ($	$\phi_s imes min(f_y, 60)$	000 psi) × d)	= 0.000 in²/ft				
Min area of shear reinforcement (T	able 9.6.3.4)	A _{sv,min} = max(5 in²/ft	50 psi, 0.75 ps	i × √(f'₀ / 1 psi)) × b / min(f _y , 600	000 psi) = 0.260			
				<i>φ</i> V _c / 2 >=	= V _u - no reinforc	ement required			
Area of shear reinforcement require	ed	A _{sv,req} = 0.000	in²/ft	·		-			
Shear reinforcement provided		No shear reinf	orcement						
Area of shear reinforcement provid	ed	Asv,prov = 0.000) in²/ft						
			PASS - N	o shear reinf	orcement requir	$ed \ (\phi V_c/2 >= V_u)$			



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___ DATE ____ SCALE _ Pump pedestal design



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<u> </u>	oading from Mech team Load of Vertical Pump on Sole I	Plate					
	Fullerton Well 7A						
	Xylem 16 DMC Pump						
#	Description	Load (Lbs)	OD	ID	T or L	lb/in^2	
1	Motor	3,150					
2	Pump Head						
	Motor Flange 24.5" dia.	93	24.5	13.5	1	0.282	
	Base Flange 38.75" dia. X 1.75" T	506	38.75	14	1.75	0.282	
	Riser Pipe	223	16	15.25	43	0.282	
	Discharge Nozzle	63	14	13.25	14	0.282	
	Discharge Flange 14" ANSI 150	71	21	14	1.31	0.282	
	Motor Shaft	46	2.19		43	0.282	
3	Pump and Column Assembly						
	Lineshaft 2.19" dia x 273 ft	3,480	2.19		3276	0.282	
	Impellers 4 x 62 lb	248					
	14" Sch 30 Column x 273 ft	14,829	14	13.25	3276	0.282	
4	Dynamic Thrust	11,400					

Total Downward Load (lbs)

34,109



Equipment Load - fro	m
spreadsheet	
Dead load = 22,709	bs
Live Load = 11,400 l	bs

20ID casing inside pedestal area volume

Area = pi/4*1.67^2 = 2.19 ft2 Volume = 2.19ft2*5.5 ft = 12.05 ft3

Total weight = $(5ftx5ftx5.5ft - 12.05 ft3) \times 0.15 kcf + 34.11 kip = 53 kip.$ Bearing area = 6 ft x 6 ft - 2.19ft2 = 33.81ft2

Bearing pressure = 53/33.81 =1.57 ksf << 1.8 ksf OK

Check punching shear = ØVn = 0.75 * 4 * sqrt (4000 psi) * (4x6ft) * (16-3in) = 59.2 kip Vu = 1.2 + 22,709 + 1.6*11,400 = 45.5 kip

Vu/ ØVn = 0.77


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SCALE _ Appendix A

Wall Panel Construction

eNoise Control Sound Barrier Wall panels are fabricated with an outer solid shell of 16/18 guage and inner perforated shell of 22 guage. Panels are stiffened with 18 guage internal channels and edge rails. The acoustic grade fill is 2.5 to 6 pcf long strand fiberglass or mineral wool depending on the application. Both fills are inert, mildew resistant, vermin proof, and incobustible and are suitable for wet/dry and freeze/thaw cycling. Mating panels are attached by inherent tongue and groove panel joints. Typical panel joints are horizontal, however vertical panel joints are used depending on the project requirements and asethetics desired.

Sound Absorption Coefficients

The acoustic performance of eNoise Control barrier wall panels is backed by independent testing in a NVLAP accredited laboratory. When tested in accordance with *ASTM C423, Standard Method of Test for Sound Absorption of Acoustic Materials in Reverberant Rooms*, the panel assembly shall have the following minimum airborne sound absorption:

			Sound Absorption								
Model	Construction ²	125	250	500	1000	2000	4000	NRC ³			
STL-4 ¹	16 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00			
STL-4 ¹	18 ga. solid / 22 ga. perforated	0.60	1.13	1.12	1.09	1.03	0.91	1.00			

 $^{1}(4) = 4$ inch thickness

² solid inner skin available

³ Noise Reduction Coefficient (NRC) is the average of coefficients at 250, 500, 1K and 2K Hz, expressed in the nearest integral multiple of 0.05.

Sound Transmission Loss

When tested in accordance with *ASTM E90*, *Standard Recommended Practice for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions*, the panel assembly shall have the following minimum airborne sound transmission loss.

			Transmission Loss, dB							
Model	Construction ²	125	250	500	1000	2000	4000	STC ³		
STL-4 ¹	16 ga. solid / 22 ga. perforated	24	32	41	51	60	66	43		
STL-4 ¹	18 ga. solid / 22 ga. perforated	21	28	39	48	56	58	40		

 $^{1}(4) = 4$ inch thickness

² solid inner skin available

³ Sound Transmission Class (STC) is determined by comparing test data with a set of standard STC contours as described in *ASTM E413*, *Standard Classification for Determination of Sound Transmission Class*.

The acoustic performance of eNoise Control Sound Barrier Wall panel systems is not degraded through prolonged exposure to noise, vibration, pressure differential, rain, wind, or snow. 297 North 9th Street, Noblesville, IN 46060 Toll Free Phone: 888.213.4711 Fax: 317.774.1911

Barrier Wall Details

The above drawing is a representation of typical construction details and is not intended to be used without consulting with eNoise Control's Engineering Department for your specific use.

www.eNoiseControl.com

297 North 9th Street, Noblesville, IN 46060 Toll Free Phone: 888.213.4711 Fax: 317.774.1911

Barrier Wall Details

The above drawing is a representation of typical construction details and is not intended to be used without consulting with eNoise Control's Engineering Department for your specific use.

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627 West La Palma Avenue, Anaheim, CA

GEOTECHNICAL EXPLORATION REPORT CITY OF FULLERTON MAIN PLANT PFAS TREATMENT FACILITY NORTHEAST OF WEST LA PALMA AVENUE AND NORTH CITRON STREET ANAHEIM, CALIFORNIA

Prepared for:

TETRA TECH, INC.

17885 Von Karman Avenue, Suite 500 Irvine, California 92614

Project No. 12740.003

June 4, 2020

June 4, 2020

Project No. 12740.003

Tetra Tech, Inc. 17885 Von Karman Avenue, Suite 500 Irvine, California 92614

Attention: Mr. Steve Tedesco, PE

Subject: Geotechnical Exploration Report City of Fullerton Main Plant PFAS Treatment Facility Northeast of West La Palma Avenue and North Citron Street Anaheim, California

In response to your request, Leighton Consulting, Inc. has conducted a geotechnical engineering exploration as a subconsultant to Tetra Tech for the City of Fullerton (City) Main Plant PFAS Treatment Facility in the city of Anaheim, California. The purpose of our services was to explore the subsurface conditions at the well site in order to provide geotechnical recommendations to aid in design and construction of the project.

Based on our field exploration, the project site is underlain by a thin mantle of artificial fill overlying alluvial deposits. The fill materials generally consisted of sand with silt. The alluvial deposits consisted of medium dense to very dense sand. Groundwater was not encountered in our borings drilled to the maximum depth of 26½ feet.

Based upon the results of this geotechnical exploration, the proposed project is feasible from a geotechnical standpoint. Specific recommendations for the geotechnical aspects of the project are presented in this report.

We appreciate the opportunity to be of service to you on this project. If you have any questions or if we can be of further service, please contact us at your convenience.

ROFESSION Status Status

Respectfully submitted,

LEIGHTON CONSULTING, INC.

Christian Delgadillo, PE, GE 3144 Senior Project Engineer

Djan Chandra, PE, GE 2376 Senior Principal Engineer

CD/DJC/Ir

Distribution: (1) Addressee

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ATTACHMENTS

Important Information about Your Geotechnical Engineering Report	Rear of Text
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Appendix A – Boring Logs	

Appendix B – Laboratory Test Results

Appendix C – City of Fullerton Standard Plans No. 312 and 313

1.0 INTRODUCTION

1.1 Site Location and Proposed Project

The PFAS Treatment Facility will be located at the City's Main Plant located northeast of the intersection of West La Palma Avenue and North Citron Street in the city of Anaheim, California. The site is a mostly unpaved rectangular lot that is bounded by West La Palma Avenue to the south, apartment buildings and/or residential houses to the west and north, and a retail/office building and parking lot to the east. The site serves as a hub for Wells 3A and 5 through 8. The wells and associated equipment are located throughout the site with a paved driveway to access the wells. The approximate site location is shown on Figure 1, *Site Location Map*.

The proposed project includes installing between 16 to 20 new IX and/or GAC vessels, and new supply and waste tanks that will be supported on concrete pads. Other improvements include associated piping and equipment, and a new paved driveway to access the vessels. The new vessels are planned on the western portion of the site. An alternative location for the vessels is being considered on the northeast portion of the site. The alternative location is also being considered to be a permanent location for additional 20 new vessels.

1.2 Purpose and Scope of Exploration

The purpose of our services was to explore the subsurface conditions at the well site in order to provide geotechnical recommendations to aid in design and construction. This geotechnical exploration was performed based on our proposal dated March 20, 2020.

The scope of this exploration included the following tasks:

- <u>Background Review</u> A background review was performed of readily available, relevant geotechnical and geological literature pertinent to the site. References used in preparation of this report are listed in Section 6.0.
- <u>Pre-Field Exploration Activities</u> Boring locations were marked and Underground Service Alert (USA) was notified to locate and mark existing underground utilities prior to our subsurface exploration.
- <u>Field Exploration</u> On April 14, 2020, we advanced six hollow-stem auger borings (LB-1 through LB-6) to depths of 11¹/₂ to 26¹/₂ feet below existing grade.

The borings were logged and sampled using Standard Penetration Test (SPT) and California Ring samplers at selected intervals following ASTM D 1586 and ASTM D 3550 for SPT and split-barrel sampling of soil. The SPT and Ring samplers were driven into the soil with a 140-pound hammer, free falling 30 inches. The number of blows was noted for every 6 inches of sampler penetration. Relatively undisturbed samples were collected from the borings using the Ring sampler. In addition to driven samples, representative bulk soil samples were also collected from the borings. Each soil sample collected was described in general conformance with the Unified Soil Classification System (USCS). The samples were sealed, packaged, and transported to our soil laboratory. The soil descriptions and depths are noted on the boring logs included in Appendix A, *Boring Logs*. After completion of drilling, the borings were backfilled with soil cuttings and compacted by a tamper. The approximate locations of our borings are shown on Figure 2, *Boring Location Map*.

- <u>Laboratory Tests</u> Laboratory tests were performed on selected soil samples obtained during our field exploration. The laboratory testing program was designed to evaluate the physical and engineering characteristics of the onsite soil. Tests performed during this exploration include:
 - In situ moisture content and dry density (ASTM D 2216 and ASTM D 2937);
 - Passing No. 200 Sieve (ASTM D 1140);
 - Direct Shear (ASTM D 3080);
 - R-value (California Test Method 301); and
 - Corrosivity Suite pH, Sulfate, Chloride, and Resistivity (California Test Methods 417, 422, and 532/643).

Test results of the in situ moisture content and dry density are presented on the boring logs in Appendix A. Other laboratory test results are presented in Appendix B, *Laboratory Test Results*.

- <u>Engineering Analysis</u> The data obtained from our background review, field exploration, and laboratory testing program were evaluated and analyzed to develop the conclusions and recommendations presented in this report for the proposed project.
- <u>Report Preparation</u> The results of the exploration are summarized in this report presenting our findings, conclusions, and recommendations.

2.0 GEOTECHNICAL FINDINGS

2.1 Subsurface Soil Conditions

Our subsurface exploration indicates that the site is underlain by man-made fill associated with construction of the existing improvements at the site and young alluvial fan deposits (Qyf). The fill is generally up to 3 feet thick and consisted mainly of sand with silt. In Boring LB-5, deeper fill was encountered (6½ feet thick) and consisted of clayey sand, silty sand, and clay with varying amounts of debris. Below the fill, the alluvium consisted of medium dense to very dense sand to the maximum explored depth of 26½ feet. Detailed descriptions of the materials encountered in the test borings are presented on the boring logs in Appendix A.

2.2 Collapse and Compressibility Potential

Hydrocollapse refers to the potential settlement of soils under existing or future stresses (loads) upon being wetted. Soil compressibility refers to settlement potential of soils when subjected to increased loads, such as from a fill surcharge or structure loads.

Based on the soils encountered during the field exploration and our review of the laboratory test results, the soils have low collapse potential and low compressibility potential under the expected loads of the proposed vessels/tanks.

2.3 <u>Soil Corrosivity</u>

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates and/or pH values of less than 5.5. Soils with chloride content greater than 500 parts per million (ppm) per California Test 422 are considered corrosive to steel, either in the form of reinforcement protected by concrete cover or plain steel substructures, such as steel pipes. Additionally, soils with a minimum resistivity of less than 1,000 Ohm-cm are considered corrosive to ferrous metal. Based on the laboratory test results, the subsurface soils at the site generally have low soluble sulfate contents and neutral pH values. The test results also indicate that the onsite soils have low corrosion potential to buried ferrous metals. The test results are included in Appendix B of this report.

2.4 <u>Groundwater</u>

Groundwater was not encountered in our borings drilled to a maximum depth of 26½ feet below ground surface. The groundwater contour map in the *Seismic Hazard Zone Report for the Anaheim 7.5-Minute Quadrangle* (California Geological Survey, 1997) indicates that the historically high groundwater table in the area is greater than 50 feet below the existing grade. Groundwater is not expected to adversely impact the proposed construction.

Fluctuations of the groundwater level, localized zones of perched water, and an increase in soil moisture should be anticipated during and following the rainy seasons or periods of locally intense rainfall or stormwater runoff.

2.5 <u>Primary Seismic Hazard</u>

Our review of available in-house literature indicates that the project site is not located within an Alquist-Priolo (AP) Earthquake Fault Zone (Hart and Bryant, 2007). The principal seismic hazard that could affect the site is ground shaking resulting from an earthquake occurring along any one of several major active faults in the region. The known regional faults that could produce the most significant ground shaking at the project site include the Puente Hills Blind Thrust and Elsinore faults located approximately 1.7 miles and 6.8 miles, respectively, from the site.

The intensity of ground shaking at a given location depends primarily upon the earthquake magnitude, the distance from the source, and the site response characteristics. Peak horizontal ground accelerations are generally used to evaluate the intensity of ground motion. Using the SEAOC/OSHPD Seismic Design Maps Tool (https://seismicmaps.org/) to obtain seismic design parameter values from the United States Geological Survey (USGS), the peak ground acceleration for the Maximum Considered Earthquake (MCE_G) adjusted for the Site Class effects (PGA_M) is 0.71g. Based on the USGS online unified hazard tool program (USGS, 2020a), the modal seismic event is Moment Magnitude (M_W) 7.3 at a distance of 6.1 miles.

2.6 <u>Secondary Seismic Hazards</u>

Secondary seismic hazards in the region could include soil liquefaction and the associated surface manifestation, earthquake-induced landsliding and flooding,

seiches, and tsunamis. A site-specific evaluation of these potential hazards is discussed in the following sections.

2.6.1 Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subjected to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density, fine, clean sandy soils; and 3) strong ground motion. Effects of liquefaction can include sand boils, settlement, and bearing capacity failures below structural foundations.

Review of the Seismic Hazard Zone Map for the Anaheim Quadrangle (CGS, 1998) indicates the subject site is <u>not</u> located within an area that has been identified by the State of California as being potentially susceptible to the occurrence of liquefaction. The relatively deep historic high groundwater also indicate that the liquefaction potential is very low.

2.6.2 Earthquake-Induced Settlement

Seismically induced settlement consists of dry dynamic settlement (above groundwater) and liquefaction-induced settlement (below groundwater). These settlements occur primarily within loose to medium dense sandy soil due to reduction in volume during, and shortly after, an earthquake event. We have performed analyses to calculate the potential earthquake-induced settlement at the site. The settlements of these strata were estimated to result in a cumulative settlement of less than ½ inches. Differential settlement is estimated to be approximately one-half of the total settlement.

2.6.3 Seismically Induced Landslides

Review of the Seismic Hazard Zone Map for the Anaheim Quadrangle (CGS, 1998) indicate the subject site is <u>not</u> located within an area that has been identified by the State of California as being potentially susceptible to the occurrence of seismically-induced landslides. In addition, no significant ground slopes exist at the site and in the vicinity. Therefore, the potential for seismically induced landslides is considered negligible.

2.6.4 Earthquake-Induced Flooding

Earthquake-induced flooding can be caused by failure of dams or other water-retaining structures as a result of earthquakes. Due to the absence of these structures near the site, the potential for earthquake-induced flooding of the site in considered low.

2.6.5 Seiches and Tsunamis

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Tsunamis are waves generated in large bodies of water by fault displacement or major ground movement. Based on the absence of an enclosed water body near the site and the inland location of the site, seiche and tsunami risks at the site are considered negligible.

3.0 DESIGN RECOMMENDATIONS

Geotechnical recommendations for the proposed improvements are presented in the following sections. Construction considerations are discussed in Section 4.0 of this report. These recommendations are based upon the exhibited geotechnical engineering properties of the soils and their anticipated response both during and after construction as well as proper field observation and testing during construction. These recommendations are considered minimal and may be superseded by more conservative requirements of the civil engineer, building code, and local agencies. All earthwork should be performed in accordance with the recommendations below, unless specifically revised or amended by future review of project plans.

3.1 <u>Earthwork</u>

3.1.1 <u>Site Preparation</u>

Vegetation, debris, and other deleterious materials should be removed and disposed of offsite prior to the commencement of grading operations. Existing underground improvements, including utility lines, should be identified prior to the start of grading and abandoned or relocated as necessary. Trenches resulted from removal of existing improvements should be excavated to competent materials and properly backfilled under the observation and testing of the geotechnical engineer.

3.1.2 Overexcavation and Recompaction

The foundation for the proposed structures should be underlain by compacted fill to provide a uniform support and reduce potential for differential settlement. The compacted fill should extend a minimum 3 feet below bottom of the foundation and a minimum 3 feet beyond outside edges of the foundation. Pavement areas, driveway, and concrete flatwork should be underlain by a minimum 1 foot of compacted fill. Local conditions may be encountered which may require additional removals and recompaction. The exact extent of removals can best be determined during grading by the geotechnical engineer when direct observation and evaluation of materials are possible.

3.1.3 Subgrade Preparation

Prior to placing fill materials, the subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned, and proofrolled. Any soft and/or unsuitable materials encountered at the bottom of the excavations should be removed and replaced with fill material.

3.1.4 Fill Placement and Compaction

The onsite soils to be used as compacted structural fill should be free of organic material, construction debris or oversized material larger than 6 inches. Imported fill soils, if any, should be approved by the geotechnical engineer prior to placement as fill. Fill soils should be placed in loose lifts not exceeding 8 inches, moisture-conditioned as necessary to slightly percent above moisture optimum and compacted to a minimum of 90 percent of the maximum dry density as determined by ASTM D 1557.

3.2 Foundation Design Parameters

The proposed IX and/or GAC vessels and new supply and waste tanks may be supported on a monolithic mat foundation system. Other appurtenance structures may be supported on shallow footings.

3.2.1 Allowable Bearing Capacity

An allowable bearing capacity of 1,800 psf and a coefficient of vertical subgrade reaction of 115 pounds per cubic inch (pci) may be used for foundation design. Mat foundation should have a minimum embedment of 12 inches below the lowest adjacent grade. Shallow footings should have a minimum embedment of 18 inches and a minimum width of 12 inches. For shallow footing design, the allowable bearing capacity may be increased by 300 psf for each additional foot of embedment depth or footing width to a maximum value of 3,000 psf. The bearing capacity may be increased by one third when considering loads of short duration, such as those imposed by wind and seismic forces.

The recommended allowable bearing capacity for the foundation is generally based on a total allowable static settlement of 1 inch, with differential settlement taken as $\frac{1}{2}$ inch over 30 feet.

3.2.2 Lateral Load Resistance

Resistance to lateral loads will be provided by a combination of friction between the soils and foundation interface and passive pressure acting against the vertical portion of the foundation. A friction coefficient of 0.35 may be used at the soil-concrete interface for calculating the sliding resistance. A passive pressure based on an equivalent fluid pressure of 390 pounds per cubic foot (pcf) may be used for calculating the lateral passive resistance. The lateral passive resistance can be taken into account only if it is ensured that the soils against embedded structures will remain intact with time. The above values do not contain an appreciable factor of safety, so the structural engineer should apply the applicable factors of safety and/or load factors during design.

3.3 <u>Slab-On-Grade</u>

Concrete slabs-on-grade subjected to special loads should be designed by the structural engineer. Where conventional light floor loading conditions exist, the following minimum recommendations for conventional slabs-on-grade should be used. More stringent requirements may be required by local agencies, the structural engineer, the architect, or the CBC.

- A minimum slab thickness of 5 inches. Slab reinforcement should be designed by the structural engineer but as a minimum should consist of No. 3 rebar placed at 24 inches on center in each direction and provided with adequate concrete cover.
- A vapor barrier, 10-mil or thicker, should be placed below slabs where moisture-sensitive floor coverings or equipment is planned. The vapor barrier should be properly sealed at all joints and any penetrations.
- To reduce the potential for excessive cracking, concrete slabs-on-grade should be provided with construction or weakened plane joints at frequent intervals. Joints should be laid out to form approximately square panels.

Our experience indicates that use of reinforcement in slabs can generally reduce the potential for drying and shrinkage cracking. Some cracking should be expected as the concrete cures. Minor cracking is considered normal; however, it is often aggravated by a high water/cement ratio, high concrete temperature at the time of placement, small nominal aggregate size, and rapid moisture loss due to

hot, dry, and/or windy weather conditions during placement and curing. Cracking due to temperature and moisture fluctuations can also be expected. The use of low slump concrete can reduce the potential for shrinkage cracking.

3.4 Seismic Design Parameters

Moderate to strong ground shaking due to seismic activity is expected at the site during the life span of the project. The 2019 CBC code-based seismic design parameters are summarized in the table below.

Categorization/Coefficients	Design Value
Site Latitude	33.8471
Site Longitude	-117.9261
Site Class	D
Mapped Spectral Response Acceleration at 0.2s Period, S_S	1.525g
Mapped Spectral Response Acceleration at 1s Period, S ₁	0.538g
Short Period Site Coefficient at 0.2s Period, Fa	1.0
Long Period Site Coefficient at 1s Period, F_v	1.762 ¹
Adjusted Spectral Response Acceleration at 0.2s Period, S_{MS}	1.525g
Adjusted Spectral Response Acceleration at 1s Period, S_{M1}	0.948g ¹
Design Spectral Response Acceleration at 0.2s Period, S_{DS}	1.017g
Design Spectral Response Acceleration at 1s Period, S_{D1}	0.632g ¹
Design Peak Ground Acceleration, PGA _M	0.71g

Table 1 – Code-Based 2019 CBC Seismic Design Parameters

¹Per Exception 2 in Section 11.4.8 of ASCE 7-16, seismic response coefficient C_S to be determined by Eq. 12.8-2 for values of T \leq 1.5T_s and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for T_L \geq T > 1.5T_s or Eq. 12.8-4 for T > T_L

3.5 Lateral Earth Pressures

The following recommendations may be used for design and construction of retaining structures at the site. We recommend that any permanent earth retaining structures be backfilled with onsite or import soil with Expansion Index (EI) of not greater than 50 (per ASTM D 4829).

Condition	Level Backfill
Active	37 pcf
At-Rest	57 pcf
Passive	390 pcf
	(Maximum of 3,900 psf)

Table 2 – Equivalent Fluid Pressures

Retaining walls retaining more than 6 feet of soil should consider a seismic earth pressure increment with an inverted triangular distribution of 20 psf/foot in addition to the active earth pressure provided above. The above values do not contain an appreciable factor of safety, so the structural engineer should apply the applicable factors of safety and/or load factors during design. Retaining walls should be provided with a drainage system behind the wall to prevent build-up of hydrostatic pressure.

Cantilever walls that are designed for a deflection at the top of the wall of at least 0.001H, where H is equal to the wall height, may be designed using the active earth pressure condition. Rigid walls that are not free to rotate, walls that are braced at the top, and walls that provide indirect support for foundations should be designed using the at-rest condition.

Lateral load resistance will be provided by the sliding resistance at the base of the foundation and the passive pressure developed along the front of the foundation. A frictional resistance coefficient of 0.35 may be used at the concrete and soil interface.

In addition to the above lateral forces due to retained earth, the appropriate loads due to surcharges should be considered in the design of retaining structures.

3.6 <u>Cement Type</u>

Based on the results of laboratory testing, concrete structures in contact with the onsite soil are expected to have negligible exposure to water-soluble sulfates in the soil. Common Type II cement may be used for concrete construction onsite and the concrete should be designed in accordance with CBC requirements. However, Type V cement should be used for concrete expected to be in contact with recycled water.

3.7 <u>Pavement Design</u>

Driveways and parking areas can be constructed using conventional asphalt concrete (AC) over aggregate base (AB). We have designed the pavement sections using a design R-value of 50 for different Traffic Indices (TI) and the minimum pavement thickness is presented in Table 3. The pavement design was performed using the method in *Orange County Highway Design Manual*.

Traffic Index	Flexible Pavement (inches)					
I raffic index	AC	AB				
5 or less	3	41⁄2				
6	4	41⁄2				
7	41⁄2	5				

 Table 3 – Pavement Sections

Concrete pavement, if used, may consist of 6 inches of Portland Cement Concrete (PCC) over 4 inches of AB. The PCC pavement sections should be provided with crack-control joints spaced no more than 10 feet on-center each way, to control where cracks develop.

All pavement construction should be performed in accordance with the *Standard Specifications for Public Works Construction*. Field inspection and periodic testing, as needed during placement of the base course materials, should be undertaken to ensure that the requirements of the standard specifications are fulfilled. Prior to placement of aggregate base, the subgrade soil should be processed to a minimum depth of 8 inches, moisture-conditioned, as necessary, and recompacted to a minimum of 90 percent relative compaction. Localized areas of loose soils may be encountered that require deeper removal and recompaction. The actual extent of the removal depth will be best determined during construction when direct observation of the subgrade soils can be made.

Aggregate base should be moisture conditioned, as necessary, and compacted to a minimum of 95 percent relative compaction.

Aggregate base and asphalt materials should conform to Sections 200-2 and 203, respectively, of the *Standard Specifications for Public Works Construction*. PCC should conform to Section 201 of the *Standard Specifications for Public Works Construction*.

3.8 Additional Geotechnical Services

Geotechnical observation and testing should be provided during the following activities:

- Upon completion of site clearing, where applicable;
- During site earthwork;
- Compaction of all fill materials;
- During installation of temporary shoring, wherever needed;
- After foundation excavations and prior to placement of concrete;
- Utility trench backfilling and compaction;
- Pavement subgrade and base preparation;
- Placement of asphalt concrete; and
- When any unusual conditions are encountered.

4.0 CONSTRUCTION CONSIDERATIONS

4.1 <u>Trench Backfill</u>

Per the City of Fullerton *Standard Plans No. 312 and 313* (Appendix C), utility trenches should be backfilled with Class 2 Aggregate Base. As an alternative and with approval from the City, it is our opinion that utility trenches may be backfilled with the onsite material, provided it is free of debris, organic material and oversized material (greater than 6 inches). All backfill should be placed in thin lifts (appropriate for the type of compaction equipment), moisture conditioned above optimum, and mechanically compacted to at least 90 percent relative compaction, relative to the ASTM D 1557 laboratory maximum density.

Prior to backfilling the trench, pipes should be bedded in and covered with sand that exhibits a Sand Equivalent (SE) of 30 or greater. Bedding material for water main pipes shall consist of sand that exhibits a SE of 60 or greater. The pipe bedding should extend at least 4 inches below the pipeline invert and at least 12 inches over the top of the pipeline. The bedding and shading sand may be densified in place by water jetting or by vibratory, lightweight compaction equipment. Jetting of trench bedding is subject to the approval of the City.

Where utility trenches cross underneath building footing, the trenches should be plugged by a minimum of 2 feet of impermeable clayey soils or sand/cement slurry to reduce the potential for water intrusion underneath the slab.

4.2 <u>Temporary Excavations and Shoring Design</u>

All temporary excavations should be performed in accordance with project plans, specifications, and all OSHA requirements. Excavations 5 feet or deeper should be laid back or shored in accordance with OSHA requirements before personnel are allowed to enter.

Typical cantilever shoring should be designed using an active earth pressure presented in Table 2. If excavations are braced at the top and at specific design intervals, the active pressure may then be approximated by a rectangular soil pressure distribution with the pressure per foot of width equal to 24H, where H is equal to the depth of the excavation being shored. These lateral earth pressures are for a drained condition. For an undrained condition, hydrostatic pressure should be included.

During construction, the soil conditions should be regularly evaluated to verify that conditions are as anticipated. The contractor should be responsible for providing the "competent person" required by OSHA, standards to evaluate soil conditions. Close coordination between the competent person and the geotechnical engineer should be maintained to facilitate construction while providing safe excavations.

5.0 LIMITATIONS

This report was based solely on data obtained from a limited number of geotechnical exploration, and soil samples and tests. Such information is, by necessity, incomplete. The nature of many sites is such that differing soil or geologic conditions can be present within small distances and under varying climatic conditions. Changes in subsurface conditions can and do occur over time. Therefore, the findings, conclusions, and recommendations presented in this report are only valid if Leighton Consulting has the opportunity to observe subsurface conditions during grading and construction, to confirm that our preliminary data are representative for the site. Leighton Consulting should also review the construction plans and project specifications, when available, to comment on the geotechnical aspects.

It should be noted that the recommendations in this report are subject to the limitations presented in this section. An information sheet prepared by GBC (Geotechnical Business Council) is also included at the rear of the text. We recommend that all individuals using this report read the limitations along with the attached information sheet.

Our professional services were performed in accordance with the prevailing standard of professional care as practiced by other geotechnical engineers in the area. We do not make any warranty, either expressed or implied. The report may not be used by others or for other projects without the expressed written consent of our client and our firm.

6.0 **REFERENCES**

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- _____, 2020b, Interactive Fault Map, http://earthquake.usgs.gov/hazards/gfaults/map/
- _____, 2020c, Interactive Geologic Map, <u>http://ngmdb.usgs.gov/maps/MapView/</u>

Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative - interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will <u>not</u> likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will <u>not</u> be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnicalengineering report did not read the report in its entirety. Do <u>not</u> rely on an executive summary. Do <u>not</u> read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept* responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are <u>not</u> final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnicalengineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform constructionphase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note* conspicuously that you've included the material for information purposes only. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, only from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and be sure to allow enough time to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, proper implementation of the geotechnical engineer's recommendations will <u>not</u> of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. Geotechnical engineers are <u>not</u> building-envelope or mold specialists.

Telephone: 301/565-2733 e-mail: info@geoprofessional.org www.geoprofessional.org

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APPENDIX A BORING LOGS

GEOTECHNICAL BORING LOG LB-1

Proj	ect N	о.	12740.003						Date Drilled	4-14-20	0		
Proj	ect	-	City o	f Fuller	ton Mair	Plant	PFAS	Treatr	nent Facility Logged By	SG			
Drill	ing Co	o.	2R Dr	rilling, Ir	าс.				Hole Diameter	8"			
Drilling Method Hollow Stem Auger; Hammer:							er: Aut	tomatio	c, 140 lb, 30 in drop Ground Elevation	144'			
Loca	ation	_	See F	igure 2	- Boring	J Locat	ion Ma	ар	Sampled By	SG			
tion	뚶뇄	d Dic	des	e No.	vs ches	nsity	ure ìt, %	lass.		ation at the	Test		
Fee	Dep Fee	Log	ttitu	mpl	6 In V	De Dc	loist	il Cl	time of sampling. Subsurface conditions may differ at other	locations	e of		
Ξ			Ā	Sa	Per	ď	≥ວິ	Sc Sc	actual conditions encountered. Transitions between soil typ rradual	bes may be	Тур		
	0	N S											
	_			B-1	T			SP-SM	 <u>Artificial Fill (AT)</u> @0': Poorly graded SAND with SILT (SP-SM), dark brow fine to medium sand, non plastic silt, with grass 	n, moist,	CR RV		
140-	_			 R-1	4 7 9	114	3	SP	Young Alluvial Fan Deposits (Qyf) @2': Poorly graded SAND (SP), medium dense, grayish brownish white, moist, fine to medium sand	white to	-200		
140	5												
	_			R-2	5 7 9	108	3						
	_												
135-	_												
	10			R-3	10	104	3		@10': Poorly graded SAND (SP), medium dense to dens	e, grayish			
	-				14 23				white to brownish white, moist, fine to medium sand				
	_												
130-	_												
	15			S-4	6 8				@15': Becomes medium sand				
	_				∐ 12 								
	_				H								
125-	20												
				R-5	12 23 27	116	5		@20': Poorly graded SAND (SP), dense to very dense, g white to brownish white, moist, medium sand	rayish			
	_												
120-	_												
	25—			S-6	M 11								
	_			0-0	18 23								
	_				H				Boring terminated at 26.5 ft. Groundwater not encountered.				
	_				Ħ				Dackinieu with auger cuttings.				
115-	-				П								
SAN		PES:		TYPE C	OF TESTS:		De	רופר					
		DRE SAMP	LE	AL A			ы Б Б Б Б Б Б С Б С Б С Б С Б С Б С Б С	EXP/ HVD	INSION INDEX SE SAND EQUIVALENT SOMETER SG SPECIFIC GRAVITY				
R	RI	NG SAMPL	LL LE N SAMPU	CO (COLLAPSE	N	MD PP	MAX	MUM DENSITY UC UNCONFINED COMPRESSIVE STREI	идтн			
L T		JBE SAMPI			UNDRAINE	D TRIAXI	AL RV	R VA			-		

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-2

Proj	ject N	0.	12740	0.003					Date Drilled	4-14-20	
Proj	ect		City o	f Fullert	on Main	Plant	PFAS	Treatr	nent Facility Logged By	SG	
Drill	ing Co	D.	2R Dr	illing, In	IC.				Hole Diameter	8"	
Drill	ing M	ethod	Hollo	w Stem	Auger; H	lamme	er: Aut	omatic	, 140 lb, 30 in drop Ground Elevation	144'	
Loc	ation		See F	igure 2	- Boring	Locat	ion Ma	Sampled By	SG		
Elevation Feet	Depth Feet	z Graphic v	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION This Soil Description applies only to a location of the explorat time of sampling. Subsurface conditions may differ at other la and may change with time. The description is a simplification actual conditions encountered. Transitions between soil type gradual.	tion at the locations n of the es may be	Type of Tests
	0							SP-SM	Artificial Fill (Af) @0': Poorly graded SAND with SILT (SP-SM), dark brown fine to medium sand, non plastic silt, with grass	, moist,	
140-	_			- <u> </u>	5 7 10	97	2	SP	Young Alluvial Fan Deposits (Qyf) @2': Poorly graded SAND (SP), medium dense, whiteish l yellowish brown, moist, fine to medium sand	brown to	DS
	5— — —			R-2	6 7 9	111	3				
135-	 10			R-3	8 15 22	100	4		@10': Poorly graded SAND (SP), dense, whiteish brown, r medium sand	moist,	
130-	_ 15			R-4	12 20 26	100	2		@15': Becomes medium to coarse sand		
125-	 20			S-5	12 10 14				@20': Poorly graded SAND (SP), dense, light brown, mois medium sand	st,	
120-	 25 			R-6	23 37 50				 @25': Poorly graded SAND (SP), very dense, light brown, medium to coarse sand Boring terminated at 26.5 ft. Groundwater not encountered. Backfilled with auger cuttings. 	moist,	
115- SAN B C G R S T	30	(PES: JLK SAMP DRE SAMP RAB SAMP NG SAMP LIT SPOO IBE SAMP	LE PLE LE IN SAMPLI	TYPE O -200 % AL A CN C CO C E CR C CU L	F TESTS: 6 FINES PA ATTERBERG CONSOLIDA COLLAPSE CORROSIOI INDRAINEE	SSING G LIMITS ATION N D TRIAXI	DS El H MD PP AL RV	DIRE EXPA HYDF MAXI POCH R VA	CT SHEAR SA SIEVE ANALYSIS INSION INDEX SE SAND EQUIVALENT COMETER SG SPECIFIC GRAVITY MUM DENSITY UC UNCONFINED COMPRESSIVE STRENG CET PENETROMETER LUE	GTH	

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-3

Pro	ject N	0.	12740	0.003					Date Drilled	4-14-20		
Proj	ect		City o	f Fullert	on Main	Plant	PFAS	Treatr	nent Facility Logged By	SG		
Drill	ling C	0.	2R Dr	illing, In	с.				Hole Diameter	8"		
Drill	ling M	ethod	Hollo	w Stem	Auger; H	lamm	er: Aut	omatic	, 140 lb, 30 in drop Ground Elevation	Ground Elevation 144'		
Loc	ation		See F	igure 2	- Boring	Locat	ion Ma	ар	Sampled By	SG		
Elevation Feet	Depth Feet	z Graphic v	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION This Soil Description applies only to a location of the explor time of sampling. Subsurface conditions may differ at other and may change with time. The description is a simplificati actual conditions encountered. Transitions between soil typ gradual.	ation at the r locations on of the bes may be	Type of Tests	
	0			B-1		99	5	SP-SM	Artificial Fill (Af) @0': Poorly graded SAND with SILT (SP-SM), medium of brown, moist, fine sand, non plastic silt, with grass	lense, dark		
140-	_ 5			R-2		98	4	SP	Young Alluvial Fan Deposits (Qyf) @3': Poorly graded SAND (SP), medium dense, whiteish moist, fine to medium sand	n brown,	-	
135-	- - - 10			R-3	8	104	3		@10': Poorly graded SAND (SP), medium dense, whiteis	sh brown,		
130-	- - - 15			S-4	12 18 5 8 14				moist, medium sand			
125-	 20			R-5	11 28 38	112	3		@20': Poorly graded SAND (SP), very dense, whiteish b moist, medium sand	rown,		
120-	 25 			S-6	7 12 16				 @25': Poorly graded SAND (SP), dense, whiteish brown fine to medium sand Boring terminated at 26.5 ft. Groundwater not encountered 	, moist,	_	
115- SAI B C G	30	YPES: JLK SAMP DRE SAMP RAB SAMP NG SAMPI		TYPE O -200 % AL A CN C CO C	F TESTS: FINES PA TTERBER ONSOLIDA	SSING G LIMITS ATION	DS S EI H MD	DIRE EXPA HYDF MAXI	CT SHEAR SA SIEVE ANALYSIS INSION INDEX SE SAND EQUIVALENT ROMETER SG SPECIFIC GRAVITY MUM DENSITY UC UNCONFINED COMPRESSIVE STRE	NGTH		
S T	์ 51 โ	JBE SAMP	IN SAMPLI		NDRAINE	N D TRIAX	AL RV	R VA	LUE			

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***
GEOTECHNICAL BORING LOG LB-4

Proj	ject No	o.	12740	0.003					Date Drilled 4	-14-20	
Proj	ect		City o	f Fullerto	on Main	Plant	PFAS	Treatr	nent Facility Logged By S	G	
Drill	ing Co	0.	2R Dr	illing, Inc	o.				Hole Diameter 8	8"	
Drill	ing M	ethod	Hollov	v Stem A	Auger; H	lamme	er: Aut	omatic	, 140 lb, 30 in drop Ground Elevation _1	44'	
Loc	ation	-	See F	igure 2 -	Boring	Locat	ion Ma	ip	Sampled ByS	G	
Elevation Feet	Depth Feet	z Graphic v	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION This Soil Description applies only to a location of the exploration time of sampling. Subsurface conditions may differ at other loc and may change with time. The description is a simplification of actual conditions encountered. Transitions between soil types of gradual.	n at the cations of the may be	Type of Tests
	0			B-1	3	101	12	SP-SM	Artificial Fill (Af) @0': Poorly graded SAND with SILT (SP-SM), loose, dark br moist, fine sand, non plastic silt, with grass	rown,	CR
140-				R-2	3 3 5 3 5 10	98	4	SP	Young Alluvial Fan Deposits (Qyf) @3': Poorly graded SAND (SP), loose to medium dense, wh brown, moist, medium sand	- — — — –	03
135-	 10 			R-3	8 15 21	107	3		@10': Poorly graded SAND (SP), dense, whiteish brown, mo medium sand	bist,	
130-	 15 			R-4	8 21 33	96	4		@15': Poorly graded SAND (SP), dense, whiteish brown, mo medium to coarse sand	oist,	
125-	 20 			S-5	8 15 20				@20': Becomes fine to medium		
120-	 25 			R-6	19 37 50/4"				 @25': Poorly graded SAND (SP), very dense, whiteish brown moist, fine to medium sand Boring terminated at 26.5 ft. Groundwater not encountered. Backfilled with auror cuttings 	n,	
115- SAN C G R S T	30 MPLE TY BL CC GF RII SP TU	(PES: JLK SAMP DRE SAMP RAB SAMP NG SAMPL PLIT SPOO IBE SAMP	LE LE LE SAMPLE	TYPE OF -200 % AL AT CN CC CO CC E CR CC CU UN	TESTS: FINES PA TERBER(DNSOLIDA DLLAPSE DRROSIOI	SSING G LIMITS ATION N D TRIAXI	DS EI H MD PP AL RV	DIRE EXPA HYDF MAXI POCF R VA	CT SHEAR SA SIEVE ANALYSIS INSION INDEX SE SAND EQUIVALENT COMETER SG SPECIFIC GRAVITY MUM DENSITY UC UNCONFINED COMPRESSIVE STRENGT LUE	тн 🗳	*

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-5

Pro	ject No	D .	12740	0.003					Date Drilled	4-14-20	
Proj	ect	-	City o	f Fullerto	on Main	Plant	PFAS	Treatr	nent Facility Logged By	SG	
Drill	ling Co).	2R Dr	rilling, In	С.				Hole Diameter	8"	
Drill	ing Me	ethod	Hollov	w Stem /	Auger; H	lamme	er: Aut	omatio	c, 140 lb, 30 in drop Ground Elevation	144'	
Loc	ation	-	See F	igure 2 ·	- Boring	Locat	ion Ma	р	Sampled By	SG	
Elevation Feet	Depth Feet	z Graphic « Log	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION This Soil Description applies only to a location of the explore time of sampling. Subsurface conditions may differ at other and may change with time. The description is a simplification actual conditions encountered. Transitions between soil type gradual.	ation at the locations on of the bes may be	Type of Tests
140-	0— — — —			B-1 R-1	5 4 4		19	SC	Artificial Fill (Af) @0': CLAYEY SAND (SC), loose, grayish black, moist, fi low plasticity clay, with grass, wood, crushed rock and @3.5': Lean CLAY with SAND (CL), grayish black, moist,	ne sand, I glass	
	5— _			R-2	2 3 3		17	SM	 plasticity clay, fine to coarse sand @5': SILTY SAND with GRAVEL (SM), loose, reddish bla brownish black, moist, fine to medium sand, low plast fine to coarse subangular gravel, with class and brick 	ack to icity silt, fragments	
135-	 10			R-3	 10 	101	3	SP	Young Alluvial Fan Deposits (Qyf) @6.5': Poorly graded SAND (SP), medium dense, yellow to whiteish brown, moist, medium sand	ish brown	
130-	 15								Boring terminated at 11.5 ft. Groundwater not encountered. Backfilled with auger cuttings.		-
125-	 20 				-						
120-	 25 				-						
115- SAI C G R S T	30	'PES: ILK SAMP DRE SAMP RAB SAMP NG SAMPL LIT SPOO BE SAMP	le Le Le N SAMPLI Le	TYPE OF -200 % AL A CN C CO C E CR C CU U	TESTS: FINES PA TTERBER ONSOLID/ OLLAPSE ORROSIO NDRAINEI	ASSING G LIMITS ATION N D TRIAXI	DS EI H MD PP AL RV	DIRE EXPA HYDI MAXI POCI R VA	CT SHEAR SA SIEVE ANALYSIS INSION INDEX SE SAND EQUIVALENT ROMETER SG SPECIFIC GRAVITY MUM DENSITY UC UNCONFINED COMPRESSIVE STREM KET PENETROMETER LUE	NGTH	

*** This log is a part of a report by Leighton and should not be used as a stand-alone document. ***

GEOTECHNICAL BORING LOG LB-6

Pro	ject No	D .	12740	0.003					Date Drilled	4-14-20	C
Proj	ect	-	City o	f Fullert	on Main	Plant	PFAS	Treatr	nent Facility Logged Bv	SG	
Drill	ing Co).	2R Dr	rilling, In	IC.				Hole Diameter	8"	
Drill	ing Me	ethod	Hollo	w Stem	Auger; H	lamm	er: Aut	tomatic	c, 140 lb, 30 in drop Ground Elevation	144'	
Loc	ation		See F	igure 2	- Boring	Locat	ion Ma	ар	Sampled By	SG	
Elevation Feet	Depth Feet	z Graphic v	Attitudes	Sample No.	Blows Per 6 Inches	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	SOIL DESCRIPTION This Soil Description applies only to a location of the explore time of sampling. Subsurface conditions may differ at other and may change with time. The description is a simplification actual conditions encountered. Transitions between soil typ gradual.	ation at the clocations on of the bes may be	Type of Tests
	0			B-1				SP-SM	Artificial Fill (Af) @0': Poorly graded SAND with SILT (SP-SM), dark brow fine to medium sand, non plastic silt, with grass	n, moist,	
140-				 R-1	4 6 8	93	5	SP -	Young Alluvial Fan Deposits (Qyf) @2': Poorly graded SAND (SP), medium dense, brownis moist, medium sand	h yellow,	
	5— — —			R-2	4 8 13	102	4		@5': Poorly graded SAND (SP), medium dense to dense brown, moist, medium sand	e, whiteish	
135-	 10			R-3	9 15 32	103	2		@10': Becomes medium to coarse sand		
130-	 15								Boring terminated at 11.5 ft. Groundwater not encountered. Backfilled with auger cuttings.		
125-	 20 										
120-	 25 										
115-	20										
SA				TYPE O	F TESTS:	SSING	ne	חוסב			
	GR GR SP TU	DRE SAMP RAB SAMP NG SAMPL LIT SPOO	LE LE LE N SAMPLI LE	AL A CN C CO C E CR C CU U	CONSOLID CONSOLID COLLAPSE CORROSIO	G LIMITS ATION N	S EI H MD PP AL RV	EXPA EXPA HYDI MAXI POCI R VA	INSION INDEX SE SAND EQUIVALENT ROMETER SG SPECIFIC GRAVITY MUM DENSITY UC UNCONFINED COMPRESSIVE STREI (ET PENETROMETER LUE	NGTH	K

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APPENDIX B LABORATORY TEST RESULTS



Boring No.	LB-1							
Sample No.	R-1							
Depth (ft.)	2.0							
Sample Type	Ring							
Soil Identification	Grayish brown poorly-graded sand (SP)							
Moisture Correction								
Wet Weight of Soil + Container (g)	0.00							
Dry Weight of Soil + Container (g)	0.00							
Weight of Container (g)	1.00							
Moisture Content (%)	0.00							
Sample Dry Weight Determina	tion				1			
Weight of Sample + Container (g)	824.90							
Weight of Container (g)	248.80							
Weight of Dry Sample (g)	576.10							
Container No.:								
After Wash	1			I	1			
Method (A or B)	А							
Dry Weight of Sample + Cont. (g)	803.40							
Weight of Container (g)	248.80							
Dry Weight of Sample (g)	554.60							
% Passing No. 200 Sieve	3.7							
% Retained No. 200 Sieve	96.3							
Leighton		PERCENT No. 200 ASTM I	PASSING) SIEVE) 1140	ì	Project Name: Project No.: Client Name: Tested By:	City of Fullerton 12740.003	MP PFAS Treatmo	ent Facility
							Dutter	· ·// - 0







SOIL RESISTIVITY TEST DOT CA TEST 643

Durdent Maria	10740.000	Transit Day
Project Name:	City of Fullerton MP PFAS Treatment Facility	Tested By :

 Project No. :
 12740.003

 Boring No.:
 LB-1

Sample No. : <u>B-1</u> Soil Identification:* Olive (SP)
 Tested By :
 O. Figueroa
 Date:
 05/05/20

 Input By:
 A. Santos
 Date:
 05/15/20

 Depth (ft.) :
 1-5

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	20	15.32	29500	29500
2	30	22.99	23000	23000
3	40	30.65	23500	23500
4				
5				

Moisture Content (%) (MCi)	0.00
Wet Wt. of Soil + Cont. (g)	0.00
Dry Wt. of Soil + Cont. (g)	0.00
Wt. of Container (g)	1.00
Container No.	
Initial Soil Wt. (g) (Wt)	130.51
Box Constant	1.000
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100
	<u></u>

Min. Resistivity Moisture Content		Sulfate Content	Chloride Content	Soil pH		
(ohm-cm)	(%)	(ppm)	(ppm)	pН	Temp. (°C)	
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA	A Test 643	
22640	25.3	82	20	7.68	21.3	





SOIL RESISTIVITY TEST **DOT CA TEST 643**

Project Name:	City of Fullerton MP PFAS Treatment Facility	Tested By :	O. Figueroa	Date:	05/05/20
Project No. :	12740.003	Input By:	A. Santos	Date:	05/15/20
Boring No.:	LB-4	Depth (ft.) :	1-5		

Sample No. : B-1

Soil Identification:* Olive (SP-SM)

rested by .	O. Higuerou	Dute.	03/03/20
Input By:	A. Santos	Date:	05/15/20
Depth (ft.) :	1-5		

*California Test 643 requires soil specimens to consist only of portions of samples passing through the No. 8 US Standard Sieve before resistivity testing. Therefore, this test method may not be representative for coarser materials.

Specimen No.	Water Added (ml) (Wa)	Adjusted Moisture Content (MC)	Resistance Reading (ohm)	Soil Resistivity (ohm-cm)
1	20	15.38	8300	8300
2	30	23.08	7900	7900
3	40	30.77	8000	8000
4				
5				

Moisture Content (%) (MCi)	0.00			
Wet Wt. of Soil + Cont. (g)	0.00			
Dry Wt. of Soil + Cont. (g)	0.00			
Wt. of Container (g)	1.00			
Container No.				
Initial Soil Wt. (g) (Wt)	130.00			
Box Constant	1.000			
MC =(((1+Mci/100)x(Wa/Wt+1))-1)x100				

Min. Resistivity	Moisture Content	Sulfate Content	Chloride Content	So	il pH
(ohm-cm)	(%)	(ppm)	(ppm)	pН	Temp. (°C)
DOT CA Test 643		DOT CA Test 417 Part II	DOT CA Test 422	DOT CA	A Test 643
7890	23.5	202 70		8.04	21.6



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R-VALUE TEST RESULTS

DOT CA Test 301

PROJECT NAME:	City of Fullerton MP PFAS Treatment Facility	PROJECT NUMBER:	12740.003
BORING NUMBER:	<u>LB-1</u>	DEPTH (FT.):	1-5
SAMPLE NUMBER:	<u>B-1</u>	TECHNICIAN:	O. Figueroa
SAMPLE DESCRIPTION:	Olive poorly-graded sand (SP)	DATE COMPLETED:	4/21/2020

TEST SPECIMEN	а	b	С
MOISTURE AT COMPACTION %	10.9	11.7	12.0
HEIGHT OF SAMPLE, Inches	2.51	2.52	2.52
DRY DENSITY, pcf	115.8	115.3	111.2
COMPACTOR PRESSURE, psi	300	300	280
EXUDATION PRESSURE, psi	576	340	154
EXPANSION, Inches x 10exp-4	0	0	0
STABILITY Ph 2,000 lbs (160 psi)	22	25	28
TURNS DISPLACEMENT	5.43	5.72	5.67
R-VALUE UNCORRECTED	74	70	68
R-VALUE CORRECTED	74	70	68

DESIGN CALCULATION DATA	а	b	С
GRAVEL EQUIVALENT FACTOR	1.0	1.0	1.0
TRAFFIC INDEX	5.0	5.0	5.0
STABILOMETER THICKNESS, ft.	0.42	0.48	0.51
EXPANSION PRESSURE THICKNESS, ft.	0.00	0.00	0.00



R-VALUE BY EXPANSION:	N/A
R-VALUE BY EXUDATION:	69
EQUILIBRIUM R-VALUE:	69



APPENDIX C GRANT REQUIREMENTS

Certification of Receipt of Grant Requirements

Project Name_____

Specification Number

I, the undersigned, hereby state I am legally allowed to sign on behalf of the Contractor named below, and that I received and read a copy of the grant agreement. I certify that the below named contractor will assist the City of Fullerton in meeting the requirements of the Bureau of Reclamation applicable grant agreement.

Date:_____

Signature

Name of Person allowed to sign on behalf of Contractor-Please Print.

Contractor Name

Well 7A Equipping Project

This Project will be partially funded by Bureau of Reclamation.

The Grant has regulatory requirements that the City of Fullerton is required to include in all contracts for work related to the performance of the Grants. The contractors must assist the City in meeting the federal and state requirements that apply to the scope stated in their contracts. If a sub is hired, the grant requirements language must be included in the sub's contract in its entirety.

FINANCIAL ASSISTANCE AGREEMENT BETWEEN BUREAU OF RECLAMATION AND CITY OF FULLERTON FOR WELL 7A PROJECT

Approved as to form: Richard D. Jones, City Attorney City of Fullerton Date: 1-9.20 ~

UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION ASSISTANCE AGREEMENT

1A. AGREEMENT NUMBER	1B. MOD NUMBER	2. TYPE OF AGREEMENT	ſ	3. CL	ASS OF	RECIPIENT	
R19AP00106	R19AP00106 New Award			US Local Government			
4. ISSUING OFFICE			5. RECIPIENT				
Bureau of Reclamation Upper Colorado Regional Office 125 South State Street, Room 8100 Salt Lake City, UT 84138			City of Fullerton 303 West Commonwealth Avenue Fullerton, CA 92832-1710				
			EIN #:	956000711	Count	tv:	Orange County
			DUNS #:	081814881	Cong	ress. Dist:	CA-039
6. RECIPIENT PROJECT MANAGE	ર		7A. INITIAL	AGREEMENT		7B. MODIFICA	ATION EFFECTIVE DATE:
Tiffany Foo, Associate City of Fullerton	Water Engineer	-	See B	lock 13.a belo	ow	N/A	
303 West Commonwe	alth Avenue		8. COMPLET	TION DATE			
Fullerton, CA 92832-1 714-738-6321	710		June 3	30, 2022			
	5111						
9A. PROGRAM STATUTORY AUTHORITY Section 9504(a) of the Secure Water Act, Public Law 111-11 (4 as amended		2 United S	tates Code 103	64),	9B. CFDA Nu 15.514	mber	
10. FUNDING INFORMATION	1	NON-FEDERAL	RECLAMATION		TOTAL PROJECT COSTS		
Total Estimated Amount of Agree	ment \$2	2,293,702.00	\$300,000.00		\$2,593,702.00		
This Obligation	\$2	2,293,702.00	\$290,000.00		\$2	,583,702.00	
Previous Obligation	1	\$0.00	\$0.00		\$0.00		
NEPA/Environmental Hold Back		\$0.00	\$10,000.00 \$10			510,000.00	
Total Obligation	\$2	2,293,702.00	\$290,000.00		\$2	\$2,583,702.00	
11. PROJECT TITLE							
Well 7A Project			24				
12a. Acceptance of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the above-named recipient		d 13a. Award of this Assistance Agreement in accordance with the terms and conditions contained herein is hereby made on behalf of the United States of America, Department of the Interior, Bureau of Reclamation			nce with the terms and ehalf of the United States of Reclamation		
BY: Claring one		BY:					
DATE: 7-8-2020			DATE:				
12b. NAME AND TITLE OF SIGNED	ξ		13b. NAME OF GRANTS OFFICER				
Kenneth A.I	omen		Heidi Hansen				
miti Magai	out Magazer			801-524-3760			
CITES COROLOT			heidihansen@usbr.gov				

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Financial Assistance Agreement Between Bureau of Reclamation And City of Fullerton For Well 7A Project

I. OVERVIEW AND SCHEDULE

1. AUTHORITY

This Financial Assistance Agreement (Agreement) is entered into between the United States of America, acting through the Department of the Interior, Bureau of Reclamation (Reclamation) and *the* City of Fullerton (Recipient), pursuant to Section 9504(a) of the SECURE WATER ACT, Subtitle F of Title IX of the OMNIBUS PUBLIC LAND MANAGEMENT ACT OF 2009, Public Law 111-11 (42 United States Code 10364), as amended (the "Act"). The following section, provided in full text, authorizes Reclamation to award this financial assistance agreement:

SEC. 9504. WATER MANAGEMENT IMPROVEMENT.

(a) AUTHORIZATION OF GRANTS AND COOPERATIVE AGREEMENTS.—

(1) AUTHORITY OF SECRETARY.—The Secretary may provide any grant to, or enter into an agreement with, any eligible applicant to assist the eligible applicant in planning, designing, or constructing any improvement—

- (A) to conserve water;
- (B) to increase water use efficiency;
- (C) to facilitate water markets;
- (D) to enhance water management, including increasing the use of renewable energy in the management and delivery of water;
- (*E*) to accelerate the adoption and use of advanced water treatment technologies to increase water supply;
- (F) to prevent the decline of species that the United States Fish and Wildlife Service and National Marine Fisheries Service have proposed for listing under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) (or candidate species that are being

considered by those agencies for such listing but are not yet the subject of a proposed rule);

- (G) to accelerate the recovery of threatened species, endangered species, and designated critical habitats that are adversely affected by Federal reclamation projects or are subject to a recovery plan or conservation plan under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) under which the Commissioner of Reclamation has implementation responsibilities; or
- (H) to carry out any other activity—
 - *(i) to address any climate-related impact to the water supply of the United States that increases ecological resiliency to the impacts of climate change; or*
 - *(ii) to prevent any water-related crisis or conflict at any watershed that has a nexus to a Federal reclamation project located in a service area.*

2. PUBLIC PURPOSE OF SUPPORT OR STIMULATION

The proposed Well 7A Project (Project) will increase the reliability of water supplies; improve water management; and provide benefits for fish, wildlife, and/or the environment to mitigate impacts caused by drought.

3. BACKGROUND AND OBJECTIVES

Through WaterSMART (Sustain and Manage America's Resources for Tomorrow), Reclamation leverages Federal and non-Federal funding to work cooperatively with states, tribes, and local entities as they plan for and implement actions to increase water supply reliability through investments and attention to local water conflicts. Working together with our stakeholders, WaterSMART provides support for the Department of the Interior's priorities, including creating a legacy of conservation stewardship, sustainably developing our energy and natural resources, modernizing our infrastructure through public-private partnerships, and restoring trust with local communities by improving relationships and communication with states, tribes, local governments, communities, landowners and water users.

Reclamation's WaterSMART Drought Response Program supports a proactive approach to drought by providing financial assistance to water managers to develop and update comprehensive drought plans (Drought Contingency Planning) and implement projects that will build long-term resiliency to drought (Drought Resiliency Projects). The Drought Response Program specifically contributes to the Department of the Interior's priorities to create a legacy of conservation stewardship, modernize our infrastructure, and restore trust with local communities by providing funding to states, tribes, and local governments to prepare for and address drought in advance of a crisis.

Through the Drought Response Program, Reclamation invites states, tribes, irrigation districts, water districts, and other organizations with water or power delivery authority to leverage their

Agreement No. RFYAP00106 money and resources by cost sharing with Reclamation on Drought Resiliency Projects that will increase the reliability of water supply; improve water management; and provide benefits for fish, wildlife, and the environment to mitigate impacts caused by drought.

The City of Fullerton, located in Orange County, California, will drill and construct a new potable, municipal water well with high capacity pump, motor, piping and facilities to supplement local drinking water supplies and replace a non-operational well with known contaminants. The City experienced severe and exceptional drought conditions during the 2011-2017 statewide drought. The project is estimated to produce an average of 4,850 acre-feet per year of potable water for resilience against future drought conditions. This project is identified in the North and Central Orange County Watershed Management Area Integrated Regional Water Management Plan.

4. PERIOD OF PERFORMANCE AND FUNDS AVAILABILITY

This Agreement becomes effective on the date shown in Block 13a of Page 1 of this agreement, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. The Agreement shall remain in effect until the date shown in Block 8 of Page 1 of this agreement, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. The period of performance for this Agreement may only be modified through written modification of the Agreement by a Reclamation Grants Officer.

No legal liability on the part of the Government for any payment may arise until funds are made available, in writing, to the Recipient by the Grants Officer. The total estimated amount of federal funding for this agreement is **\$300,000.00**, of which the initial amount of federal funds available is limited to **\$290,000.00** as indicated by "this obligation" within Block 10 of Page 1 of this agreement, United States of America, Department of the Interior, Bureau of Reclamation, Assistance Agreement. Subject to the availability of Congressional appropriations, subsequent funds will be made available for payment through written modifications to this agreement by a Reclamation Grants Officer. Note: **\$10,000.00** has been held-back by Reclamation for environmental review costs and monitoring costs. Any excess amount will be obligated to this agreement at a future date.

5. SCOPE OF WORK AND MILESTONES

Under this Agreement, the Recipient shall drill and construct a new potable municipal water well to replace the existing non-operating Municipal Well 7 at the City of Fullerton's Main Plant (Project). The well will produce an average of 4,850 acre-feet per year of potable water. The Project will include high capacity pump, motor, discharge piping, disinfection facilities, and electrical equipment.

The Project will be located at 627 West La Palma Avenue, Anaheim, Orange County, California at the City of Fullerton's Main Plant property. The Project latitude is 33°50' N and longitude is 117°54' W.

The milestones for completing the scope of work are:

Agreement No. RFYAP00106

Milestone / Task / Activity	Planned Start Date	Planned Completion Date
Environmental Compliance	January 2020	April 2020
Obtain Permits	February 2020	May 2022
Invitation to Bid and Construction Contract Award (Well Drilling)	June 2020	July 2020
Well Drilling Construction	August 2020	January 2021
Well Equipping Design	March 2021	August 2021
Invitation to Bid and Construction Contract Award (Well Equipping)	September 2021	November 2021
Well Equipping Construction	December 2021	June 2022
Complete Inspection and Testing	May 2022	June 2022
Project Completion		June 2022

6. RESPONSIBILITY OF THE PARTIES

6.1 Recipient Responsibilities

6.1.1 The Recipient shall carry out the Scope of Work (SOW) in accordance with the terms and conditions stated herein. The Recipient shall adhere to Federal, state, and local laws, regulations, and codes, as applicable, and shall obtain all required approvals and permits. If the SOW contains construction activities, the Recipient is responsible for construction inspection, oversight, and acceptance. If applicable, the Recipient shall also coordinate and obtain approvals from site owners and operators.

6.1.2 Interim Performance Reports. The Recipient shall prepare and submit to Reclamation interim Project performance reports (Interim Performance Reports) as required by Section I.9 of this Agreement. Each Interim Performance Report will include (but is not limited to) the information identified in paragraph I.10.3 and will discuss the following:

- A comparison of actual accomplishments to the milestones established by the financial assistance agreement for the reporting period
- The reasons why established milestones were not met, if applicable
- The status of milestones from the previous reporting period that were not met, if applicable
- Whether the Project is on schedule and within the original cost estimate
- Any additional pertinent information or issues related to the status of the Project

6.1.3 Final Project Report. The Recipient shall prepare and submit to Reclamation a final Project performance report (Final Project Report) as required by Section I.10 of this Agreement. The Final Project Report will include (but is not limited to) the information identified in paragraph I.10.3 and will discuss the following:

- Whether the Project objectives and goals were met
- Discussion of the benefits achieved by the Project, including information and/or calculations supporting the benefits
- How the Project improves long-term resiliency to drought
- How the Project demonstrates collaboration, if applicable

Photographs documenting the project are also appreciated. Recipient understands that Reclamation may print photos with appropriate credit to Recipient. Recipient also understands that the Final Project Report is a public document and may be made available on Reclamation's website, <u>www.usbr.gov/drought.</u>

6.1.4 NEPA documentation and Cultural Resources documentation is required. The recipient must have an approval from the Grants Officer prior to starting any construction.

6.2 Reclamation Responsibilities

6.2.1 Reclamation will monitor and provide Federal oversight of activities performed under this Agreement. Monitoring and oversight includes review and approval of financial status and performance reports, payment requests, and any other deliverables identified as part of the SOW. Additional monitoring activities may include site visits, conference calls, and other on-site and off-site monitoring activities. At the Recipient's request, Reclamation may also provide technical assistance to the Recipient in support of the SOW and objectives of this Agreement.

7. BUDGET

7.1 Budget Estimate. The following is the estimated budget for this Agreement. As Federal financial assistance agreements are cost-reimbursable, the budget provided is for estimation purposes only. Final costs incurred under the budget categories listed may be either higher or lower than the estimated costs. All costs incurred by the Recipient under this agreement must be in accordance with any pre-award clarifications conducted between the Recipient and Reclamation, as well as with the terms and conditions of this agreement. Final determination of the allowability, allocability, or reasonableness of costs incurred under this agreement is the responsibility of the Grants Officer. Recipients are encouraged to direct any questions regarding allowability, allocability or reasonableness of costs to the Grants Officer for review prior to incurrence of the costs in question.

BUDGET ITEM DESCRIPTION	TOTAL COST
SALARIES, WAGES, FRINGE BENEFITS	

BUDGET ITEM DESCRIPTION	TOTAL COST
	\$0.00
TRAVEL	
	\$0.00
EQUIPMENT	
	\$0.00
SUPPLIES/MATERIALS	
	\$0.00
CONTRACTUAL/ CONSTRUCTION	
	\$2,586,652.00
OTHER	
	\$7,050.00
TOTAL DIRECT COSTS	\$2,593,702.00
INDIRECT COSTS	
	\$0.00
TOTAL ESTIMATED PROJECT COST	\$2,593,702.00

7.2 Cost Sharing Requirement

At least 50% non-Federal cost-share is required for costs incurred under this Agreement. Based on the budget estimate reflected in Section 7.1 above, the estimated Federal share of allowable costs is 11.6% and the Recipient's estimated non-Federal cost share is 88.4%. The Federal share of allowable costs shall not be expended in advance of the Recipient's non-Federal share. It is expected that expenditure of Federal and non-Federal funds based upon the estimated cost share percentages shall occur concurrently. At the end of the period of performance, if the final costs are lower than the original estimate and the 50% non-Federal cost share is met, the final payment and financial report can reflect a lower Recipient cost share than the original budget estimate.

If a bona fide need arises which requires the expenditure of Federal funds in advance of the Recipient share, then the Recipient must request written approval from the Grants Officer prior to the expenditure. Recipient's may expend their agreed upon share of costs in advance of the expenditure of Federal funds without prior written approval.

7.3 Pre-Award Incurrence of Costs

The Recipient is not authorized to incur costs prior to the award of this Agreement. Costs incurred prior to the award of this agreement are not allowable.

7.4 Allowable Costs

Costs incurred for the performance of this Agreement must be allowable, allocable to the project, and reasonable. The following regulations, codified within the Code of Federal Regulations (CFR), governs the allowability of costs for Federal financial assistance:

2 CFR 200 Subpart E, "Cost Principles"

Expenditures for the performance of this Agreement must conform to the requirements within this CFR. The Recipient must maintain sufficient documentation to support these expenditures. Questions on the allowability of costs should be directed to the Grants Officer responsible for this Agreement.

The Recipient shall not incur costs or obligate funds for any purpose pertaining to operation of the program or activities beyond the expiration date stated in the Agreement. The only costs which are authorized for a period of up to 90 days following the project performance period are those strictly associated with closeout activities for preparation of the final reports.

7.5 Revision of Budget and Program Plans

In accordance with 2 CFR 200.308(g) the recipient must request prior written approval for any of the following changes:

- (a) A change in the approved scope of work or associated tasks, even if there is no associated budget revisions.
- (b) Revisions which require additional Federal funds to complete the project.
- (c) Revisions which involve specific costs for which prior written approval requirements may be imposed consistent with OMB cost principles listed in 2 CFR 200 Subpart E "Cost Principles".

7.6 Modifications

Any changes to this Agreement shall be made by means of a written modification. Reclamation may make changes to the Agreement by means of a unilateral modification to address changes in address, no-cost time extensions, changes to Key Personnel, the addition of previously agreed upon funding, or administrative corrections which do not impact the terms and conditions of this agreement. Additionally, a unilateral modification may be utilized by Reclamation if it should become necessary to suspend or terminate the Agreement in accordance with 2 CFR 200.338.

All other changes shall be made by means of a bilateral modification to the Agreement. No oral statement made by any person, or written statement by any person other than the Grants Officer, shall be allowed in any manner or degree to modify or otherwise effect the terms of the Agreement.

All requests for modification of the Agreement shall be made in writing, provide a full description of the reason for the request, and be sent to the attention of the Grants Officer. Any request for project extension shall be made at least 45 days prior to the expiration date of the Agreement or the expiration date of any extension period that may have been previously granted. Any determination to extend the period of performance or to provide follow-on funding for continuation of a project is solely at the discretion of Reclamation.

8. KEY PERSONNEL

8.1 Recipient's Key Personnel.

The Recipient's Project Manager for this Agreement shall be: Tiffany Foo Associate Water Engineer City of Fullerton 303 West Commonwealth Avenue Fullerton, CA 92832-1710 714-738-6321 tfoo@cityoffullerton.com

9. LIMITATION OF AUTHORITIES

9.1 Grants Officer.

The Grants Officer is the only official with legal delegated authority to represent Reclamation. The Grants Officer's responsibilities include, but are not limited to, the following:

- (a) Formally obligate Reclamation to expend funds or change the funding level of the Agreement;
- (b) Approve through formal modification changes in the scope of work and/or budget;
- (c) Approve through formal modification any increase or decrease in the period of performance of the Agreement;
- (d) Approve through formal modification changes in any of the expressed terms, conditions, or specifications of the Agreement;
- (e) Be responsible for the overall administration, management, and other non-programmatic aspects of the Agreement including, but not limited to, interpretation of financial assistance statutes, regulations, circulars, policies, and terms of the Agreement; Where applicable, ensures that Reclamation complies with the administrative requirements required by statutes, regulations, circulars, policies, and terms of the Agreement.

9.2 Grants Management Specialist.

The Grants Management Specialist is the primary administrative point of contact for this agreement and should be contacted regarding issues related to the day-to-day management of the agreement. Requests for approval regarding the terms and conditions of the agreement, including but not limited to modifications and prior approval, may only be granted, in writing, by a Reclamation Grants Officer. Please note that for some agreements, the Grants Officer and the Grants Management Specialist may be the same individual.

10. REPORTING REQUIREMENTS AND DISTRIBUTION

10.1 Noncompliance. Failure to comply with the reporting requirements contained in this Agreement may be considered a material noncompliance with the terms and conditions of the award. Noncompliance may result in withholding of payments pending receipt of required reports, denying both the use of funds and matching credit for all or part of the cost of the activity or action not in compliance, whole or partial suspension or termination of the Agreement, recovery of funds paid under the Agreement, withholding of future awards, or other legal remedies in accordance with 2 CFR 200.338.

10.2 Financial Reports. Federal Financial Reports shall be submitted by means of the SF-425 and shall be submitted according to the Report Frequency and Distribution schedule below. All financial reports shall be signed by an Authorized Certifying Official for the Recipient's organization.

10.3 Monitoring and Reporting Program Performance (2 CFR 200.328).

- (a) Monitoring by the non-Federal entity. The non-Federal entity is responsible for oversight of the operations of the Federal award supported activities. The non-Federal entity must monitor its activities under Federal awards to assure compliance with applicable Federal requirements and performance expectations are being achieved. Monitoring by the non-Federal entity must cover each program, function or activity. See also 200.331 Requirements for pass-through entities.
- (b) Non-construction performance reports. The Federal awarding agency must use standard, OMB-approved data elements for collection of performance information (including performance progress reports, Research Performance Progress Report, or such future collections as may be approved by OMB and listed on the OMB Web site).
 - (1) The non-Federal entity must submit performance reports at the interval required by the Federal awarding agency or pass-through entity to best inform improvements in program outcomes and productivity. Intervals must be no less frequent than annually nor more frequent than quarterly except in unusual circumstances, for example where more frequent reporting is necessary for the effective monitoring of the Federal award or could significantly affect program outcomes. Annual reports must be due 90 calendar days after the reporting period; quarterly or semiannual reports must be due 30 calendar days after the reporting period. Alternatively, the Federal awarding agency or pass-through entity may require annual reports before the anniversary dates of multiple year Federal awards. The final performance report will be due 90 calendar days after the period of performance end date. If a justified request is submitted by a non-Federal entity, the Federal agency may extend the due date for any performance report.
 - (2) The non-Federal entity must submit performance reports using OMB-approved governmentwide standard information collections when providing performance information. As appropriate in accordance with above mentioned information

Agreement No. RFYAP00106 collections, these reports will contain, for each Federal award, brief information on the following unless other collections are approved by OMB:

- (i) A comparison of actual accomplishments to the objectives of the Federal award established for the period. Where the accomplishments of the Federal award can be quantified, a computation of the cost (for example, related to units of accomplishment) may be required if that information will be useful. Where performance trend data and analysis would be informative to the Federal awarding agency program, the Federal awarding agency should include this as a performance reporting requirement.
- (ii) The reasons why established goals were not met, if appropriate.
- (iii) Additional pertinent information including, when appropriate, analysis and explanation of cost overruns or high unit costs.
- (c) Construction performance reports. For the most part, onsite technical inspections and certified percentage of completion data are relied on heavily by Federal awarding agencies and pass-through entities to monitor progress under Federal awards and subawards for construction. The Federal awarding agency may require additional performance reports only when considered necessary.
- (d) Significant developments. Events may occur between the scheduled performance reporting dates that have significant impact upon the supported activity. In such cases, the non-Federal entity must inform the Federal awarding agency or pass-through entity as soon as the following types of conditions become known:
 - (1) Problems, delays, or adverse conditions which will materially impair the ability to meet the objective of the Federal award. This disclosure must include a statement of the action taken, or contemplated, and any assistance needed to resolve the situation.
 - (2) Favorable developments which enable meeting time schedules and objectives sooner or at less cost than anticipated or producing more or different beneficial results than originally planned.

Reclamation requires Performance reporting for all financial assistance awards, both Construction and non-Construction. Performance reports for Construction agreements shall meet the same minimum requirements outlined in 2 CFR 200.328(b)(2) above.

10.4 Report Frequency and Distribution. The following table sets forth the reporting requirements for this Agreement. Please note the first report due date listed for each type of report.

Required Reports	Interim Reports	Final Report
Performance Report		

Required Reports	Interim Reports	Final Report
Format	No specific format required. See content requirements within Section 9.3 (2 CFR 200.328) above.	Summary of activities completed during the entire period of performance is required. See content requirements within Section 9.3 (2 CFR 200.328) above.
Reporting Frequency	Semi-Annual	Final Report due within 90 days after the end of the period of performance.
Reporting Period	October 1 through March 31 and April 1 through September 30.	Entire period of performance
Due Date	Within 30 days after the end of the Reporting Period.	Final Report due within 90 days after the end of the period of performance or completion of the project.
First Report Due Date	The first performance report is due for reporting period ending 09/30/2020	N/A
Submit to:	FAReporting@usbr.gov	FAReporting@usbr.gov
Federal Financial Report		
Format	SF-425 (all sections must be completed)	SF-425(all sections must be completed)
Reporting Frequency	Semi-Annual	Final Report due within 90 days after the end of the period of performance.
Reporting Period	October 1 through March 31 and April 1 through September 30.	Entire period of performance
Due Date	Within 30 days after the end of the Reporting Period.	Final Report due within 90 days after the end of the period of performance or completion of project.
First Report Due Date	The first performance report is due for reporting period ending 09/30/2020	N/A
Submit to:	FAReporting@usbr.gov	FAReporting@usbr.gov

11. REGULATORY COMPLIANCE

The Recipient agrees to comply or assist Reclamation with all regulatory compliance requirements and all applicable state, Federal, and local environmental and cultural and paleontological resource protection laws and regulations as applicable to this project. These may include, but are not limited to, the National Environmental Policy Act (NEPA), including the Council on Environmental Quality and Department of the Interior regulations implementing NEPA, the Clean Water Act, the Endangered Species Act, consultation with potentially affected Tribes, and consultation with the State Historic Preservation Office. If the Recipient begins project activities that require environmental or other regulatory compliance approval prior to receipt of written notice from the Grants Officer that all such clearances have been obtained, then Reclamation reserves the right to initiate remedies for non-compliance as defined by 2 CFR 200.338 up to and including unilateral termination of this agreement.

12. AGRICULTURAL OPERATIONS [Public Law 111-11, Section 9504(a)(3)(B)]

The Recipient shall not use any associated water savings to increase the total irrigated acreage of the Recipient or otherwise increase the consumptive use of water in the operation of the Recipient, as determined pursuant to the law of the State in which the operation of Recipient is located.

13. TITLE TO IMPROVEMENTS [Public Law 111-11, Section 9504(a)(3)(D)]

If the activities funded under this Agreement result in an infrastructure improvement to a federally owned facility, the Federal Government shall continue to hold title to the facility and improvements to the facility.

14. OPERATION AND MAINTENANCE COSTS [Public Law 111-11, Section 9504(a)(3)(E)(iv.)]

The non-Federal share of the cost of operating and maintaining any infrastructure improvement funded through this Agreement shall be 100 percent.

15. LIABILITY [Public Law 111-11, Section 9504(a)(3)(F)]

- (a) IN GENERAL.—Except as provided under chapter 171 of title 28, United States Code (commonly known as the "Federal Tort Claims Act"), the United States shall not be liable for monetary damages of any kind for any injury arising out of an act, omission, or occurrence that arises in relation to any facility created or improved under this Agreement, the title of which is not held by the United States.
- (b) **TORT CLAIMS ACT**.—Nothing in this section increases the liability of the United States beyond that provided in chapter 171 of title 28, United States Code (commonly known as the "Federal Tort Claims Act").

II. RECLAMATION STANDARD TERMS AND CONDITIONS

1. REGULATIONS

The regulations at 2 CFR Subtitle A, Chapter II, Part 200 "Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards", are hereby incorporated by reference as though set forth in full text. Failure of a Recipient to comply with any applicable regulation or circular may be the basis for withholding payments for proper charges made by the Recipient and/or for termination of support.

2. PAYMENT

2.1 Payment (2 CFR 200.305).

- (a) For states, payments are governed by Treasury-State CMIA agreements and default procedures codified at 31 CFR Part 205 "Rules and Procedures for Efficient Federal-State Funds Transfers" and TFM 4A-2000 Overall Disbursing Rules for All Federal Agencies.
- (b) For non-Federal entities other than states, payments methods must minimize the time elapsing between the transfer of funds from the United States Treasury or the pass-through entity and the disbursement by the non-Federal entity whether the payment is made by electronic funds transfer, or issuance or redemption of checks, warrants, or payment by other means. See also 200.302 Financial management paragraph (b)(6). Except as noted elsewhere in this part, Federal agencies must require recipients to use only OMB-approved standard governmentwide information collection requests to request payment.
 - (1) The non-Federal entity must be paid in advance, provided it maintains or demonstrates the willingness to maintain both written procedures that minimize the time elapsing between the transfer of funds and disbursement by the non-Federal entity, and financial management systems that meet the standards for fund control and accountability as established in this part. Advance payments to a non-Federal entity must be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the non-Federal entity in carrying out the purpose of the approved program or project. The timing and amount of advance payments must be as close as is administratively feasible to the actual disbursements by the non-Federal entity for direct program or project costs and the proportionate share of any allowable indirect costs. The non-Federal entity must make timely payment to contractors in accordance with the contract provisions.
 - (2) Whenever possible, advance payments must be consolidated to cover anticipated cash needs for all Federal awards made by the Federal awarding agency to the recipient.

- (i) Advance payment mechanisms include, but are not limited to, Treasury check and electronic funds transfer and must comply with applicable guidance in 31 CFR part 208.
- (ii) Non-Federal entities must be authorized to submit requests for advance payments and reimbursements at least monthly when electronic fund transfers are not used, and as often as they like when electronic transfers are used, in accordance with the provisions of the Electronic Fund Transfer Act (15 U.S.C. 1693-1693r).
- (3) Reimbursement is the preferred method when the requirements in paragraph (b) cannot be met, when the Federal awarding agency sets a specific condition per 200.207 Specific conditions, or when the non-Federal entity requests payment by reimbursement. This method may be used on any Federal award for construction, or if the major portion of the construction project is accomplished through private market financing or Federal loans, and the Federal award constitutes a minor portion of the project. When the reimbursement method is used, the Federal awarding agency or pass-through entity must make payment within 30 calendar days after receipt of the billing, unless the Federal awarding agency or pass-through entity reasonably believes the request to be improper.
- (4) If the non-Federal entity cannot meet the criteria for advance payments and the Federal awarding agency or pass-through entity has determined that reimbursement is not feasible because the non-Federal entity lacks sufficient working capital, the Federal awarding agency or pass-through entity may provide cash on a working capital advance basis. Under this procedure, the Federal awarding agency or passthrough entity must advance cash payments to the non-Federal entity to cover its estimated disbursement needs for an initial period generally geared to the non-Federal entity's disbursing cycle. Thereafter, the Federal awarding agency or pass-through entity must reimburse the non-Federal entity for its actual cash disbursements. Use of the working capital advance method of payment requires that the pass-through entity provide timely advance payments to any subrecipients in order to meet the subrecipient's actual cash disbursements. The working capital advance method of payment must not be used by the pass-through entity if the reason for using this method is the unwillingness or inability of the pass-through entity to provide timely advance payments to the subrecipient to meet the subrecipient's actual cash disbursements.
- (5) Use of resources before requesting cash advance payments. To the extent available, the non-Federal entity must disburse funds available from program income (including repayments to a revolving fund), rebates, refunds, contract settlements, audit recoveries, and interest earned on such funds before requesting additional cash payments.
- (6) Unless otherwise required by Federal statutes, payments for allowable costs by non-Federal entities must not be withheld at any time during the period of performance unless the conditions of 200.207 Specific conditions, Subpart D—Post Federal Award

Agreement No. RFYAP00106 Requirements of this part, 200.338 Remedies for Noncompliance, or one or more of the following applies:

- (i) The non-Federal entity has failed to comply with the project objectives, Federal statutes, regulations, or the terms and conditions of the Federal award.
- (ii) The non-Federal entity is delinquent in a debt to the United States as defined in OMB Guidance A-129, "Policies for Federal Credit Programs and Non-Tax Receivables." Under such conditions, the Federal awarding agency or passthrough entity may, upon reasonable notice, inform the non-Federal entity that payments must not be made for obligations incurred after a specified date until the conditions are corrected or the indebtedness to the Federal Government is liquidated.
- (iii) A payment withheld for failure to comply with Federal award conditions, but without suspension of the Federal award, must be released to the non-Federal entity upon subsequent compliance. When a Federal award is suspended, payment adjustments will be made in accordance with 200.342 Effects of suspension and termination.
- (iv) A payment must not be made to a non-Federal entity for amounts that are withheld by the non-Federal entity from payment to contractors to assure satisfactory completion of work. A payment must be made when the non-Federal entity actually disburses the withheld funds to the contractors or to escrow accounts established to assure satisfactory completion of work.
- (7) Standards governing the use of banks and other institutions as depositories of advance payments under Federal awards are as follows.
 - (i) The Federal awarding agency and pass-through entity must not require separate depository accounts for funds provided to a non-Federal entity or establish any eligibility requirements for depositories for funds provided to the non-Federal entity. However, the non-Federal entity must be able to account for the receipt, obligation and expenditure of funds.
 - (ii) Advance payments of Federal funds must be deposited and maintained in insured accounts whenever possible.

(8) The non-Federal entity must maintain advance payments of Federal awards in interest-bearing accounts, unless the following apply.

- (i) The non-Federal entity receives less than \$120,000 in Federal awards per year.
- (ii) The best reasonably available interest-bearing account would not be expected to earn interest in excess of \$500 per year on Federal cash balances.

- (iii) The depository would require an average or minimum balance so high that it would not be feasible within the expected Federal and non-Federal cash resources.
- (iv) A foreign government or banking system prohibits or precludes interest bearing accounts.
- (9) Interest earned amounts up to \$500 per year may be retained by the non-Federal entity for administrative expense. Any additional interest earned on Federal advance payments deposited in interest-bearing accounts must be remitted annually to the Department of Health and Human Services Payment Management System (PMS) through an electronic medium using either Automated Clearing House (ACH) network or a Fedwire Funds Service payment. Remittances must include pertinent information of the payee and nature of payment in the memo area (often referred to as "addenda records" by Financial Institutions) as that will assist in the timely posting of interested earned on federal funds. Pertinent details include the Payee Account Number (PAN) if the payment originated from PMS, or Agency information if the payment originated from ASAP, NSF or another federal agency payment system. The remittance must be submitted as follows:
 - (i) For ACH Returns: Routing Number: 051036706 Account number: 303000 Bank Name and Location: Credit Gateway—ACH Receiver St. Paul, MN
 - (ii) For Fedwire Returns*:

Routing Number: 021030004 Account number: 75010501 Bank Name and Location: Federal Reserve Bank Treas NYC/Funds Transfer Division New York, NY (* Please note organization initiating payment is likely to incur a charge from your Financial Institution for this type of payment)

(iii) For International ACH Returns:

Beneficiary Account: Federal Reserve Bank of New York/ITS (FRBNY/ITS) Bank: Citibank N.A. (New York) Swift Code: CITIUS33 Account Number: 36838868 Bank Address: 388 Greenwich Street, New York, NY 10013 USA Payment Details (Line 70): Agency Name (abbreviated when possible) and ALC Agency POC: Michelle Haney, (301) 492-5065

- (iv) For recipients that do not have electronic remittance capability, please make check** payable to: "The Department of Health and Human Services." Mail Check to Treasury approved lockbox:
 HHS Program Support Center, P.O. Box 530231, Atlanta, GA 30353-0231 (** Please allow 4-6 weeks for processing of a payment by check to be applied to the appropriate PMS account)
- (v) Any additional information/instructions may be found on the PMS Web site at http://www.dpm.psc.gov/.

2.2 Payment Method.

Recipients must utilize the Department of Treasury Automated Standard Application for Payments (ASAP) payment system to request advance or reimbursement payments. ASAP is a Recipient-initiated payment and information system designed to provide a single point of contact for the request and delivery of Federal funds. ASAP is the only allowable method for request and receipt of payment. Recipient procedures must minimize the time elapsing between the drawdown of Federal funds and the disbursement for agreement purposes.

In accordance with 2 CFR 25.200(b)(2) the Recipient shall "Maintain an active SAM registration with current information at all times during which it has an active Federal award or an application or plan under consideration by an agency". If the Recipient allows their SAM registration to lapse, the Recipient's accounts within ASAP will be automatically suspended by Reclamation until such time as the Recipient renews their SAM registration.

3. PROCUREMENT STANDARDS (2 CFR 200.317 through 200.326)

200.317 Procurements by States.

When procuring property and services under a Federal award, a state must follow the same policies and procedures it uses for procurements from its non-Federal funds. The state will comply with 200.322 Procurement of recovered materials and ensure that every purchase order or other contract includes any clauses required by section 200.326 Contract provisions. All other non-Federal entities, including subrecipients of a state, will follow 200.318 General procurement standards through 200.326 Contract provisions.

200.318 General procurement standards.

- (a) The non-Federal entity must use its own documented procurement procedures which reflect applicable State, local, and tribal laws and regulations, provided that the procurements conform to applicable Federal law and the standards identified in this part.
- (b) Non-Federal entities must maintain oversight to ensure that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders.

(c)

- (1) The non-Federal entity must maintain written standards of conduct covering conflicts of interest and governing the actions of its employees engaged in the selection, award and administration of contracts. No employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a Federal award if he or she has a real or apparent conflict of interest. Such a conflict of interest would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in or a tangible personal benefit from a firm considered for a contract. The officers, employees, and agents of the non-Federal entity may neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. However, non-Federal entities may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. The standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the non-Federal entity.
- (2) If the non-Federal entity has a parent, affiliate, or subsidiary organization that is not a state, local government, or Indian tribe, the non-Federal entity must also maintain written standards of conduct covering organizational conflicts of interest. Organizational conflicts of interest means that because of relationships with a parent company, affiliate, or subsidiary organization, the non-Federal entity is unable or appears to be unable to be impartial in conducting a procurement action involving a related organization.
- (d) The non-Federal entity's procedures must avoid acquisition of unnecessary or duplicative items. Consideration should be given to consolidating or breaking out procurements to obtain a more economical purchase. Where appropriate, an analysis will be made of lease versus purchase alternatives, and any other appropriate analysis to determine the most economical approach.
- (e) To foster greater economy and efficiency, and in accordance with efforts to promote costeffective use of shared services across the Federal Government, the non-Federal entity is encouraged to enter into state and local intergovernmental agreements or inter-entity agreements where appropriate for procurement or use of common or shared goods and services.
- (f) The non-Federal entity is encouraged to use Federal excess and surplus property in lieu of purchasing new equipment and property whenever such use is feasible and reduces project costs.
- (g) The non-Federal entity is encouraged to use value engineering clauses in contracts for construction projects of sufficient size to offer reasonable opportunities for cost reductions. Value engineering is a systematic and creative analysis of each contract item or task to ensure that its essential function is provided at the overall lower cost.

- (h) The non-Federal entity must award contracts only to responsible contractors possessing the ability to perform successfully under the terms and conditions of a proposed procurement. Consideration will be given to such matters as contractor integrity, compliance with public policy, record of past performance, and financial and technical resources. See also 200.212 Suspension and debarment.
- (i) The non-Federal entity must maintain records sufficient to detail the history of procurement. These records will include, but are not necessarily limited to the following: rationale for the method of procurement, selection of contract type, contractor selection or rejection, and the basis for the contract price.
- (j)
- (1) The non-Federal entity may use a time and materials type contract only after a determination that no other contract is suitable and if the contract includes a ceiling price that the contractor exceeds at its own risk. Time and materials type contract means a contract whose cost to a non-Federal entity is the sum of:
 - (i) The actual cost of materials; and
 - (ii) Direct labor hours charged at fixed hourly rates that reflect wages, general and administrative expenses, and profit.
- (2) Since this formula generates an open-ended contract price, a time-and-materials contract provides no positive profit incentive to the contractor for cost control or labor efficiency. Therefore, each contract must set a ceiling price that the contractor exceeds at its own risk. Further, the non-Federal entity awarding such a contract must assert a high degree of oversight in order to obtain reasonable assurance that the contractor is using efficient methods and effective cost controls.
- (k) The non-Federal entity alone must be responsible, in accordance with good administrative practice and sound business judgment, for the settlement of all contractual and administrative issues arising out of procurements. These issues include, but are not limited to, source evaluation, protests, disputes, and claims. These standards do not relieve the non-Federal entity of any contractual responsibilities under its contracts. The Federal awarding agency will not substitute its judgment for that of the non-Federal entity unless the matter is primarily a Federal concern. Violations of law will be referred to the local, state, or Federal authority having proper jurisdiction.

200.319 Competition.

(a) All procurement transactions must be conducted in a manner providing full and open competition consistent with the standards of this section. In order to ensure objective contractor performance and eliminate unfair competitive advantage, contractors that develop or draft specifications, requirements, statements of work, or invitations for bids or requests for proposals must be excluded from competing for such procurements. Some of the situations considered to be restrictive of competition include but are not limited to:

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- (1) Placing unreasonable requirements on firms in order for them to qualify to do business;
- (2) Requiring unnecessary experience and excessive bonding;
- (3) Noncompetitive pricing practices between firms or between affiliated companies;
- (4) Noncompetitive contracts to consultants that are on retainer contracts;
- (5) Organizational conflicts of interest;
- (6) Specifying only a "brand name" product instead of allowing "an equal" product to be offered and describing the performance or other relevant requirements of the procurement; and
- (7) Any arbitrary action in the procurement process.
- (b) The non-Federal entity must conduct procurements in a manner that prohibits the use of statutorily or administratively imposed state, local, or tribal geographical preferences in the evaluation of bids or proposals, except in those cases where applicable Federal statutes expressly mandate or encourage geographic preference. Nothing in this section preempts state licensing laws. When contracting for architectural and engineering (A/E) services, geographic location may be a selection criterion provided its application leaves an appropriate number of qualified firms, given the nature and size of the project, to compete for the contract.
- (c) The non-Federal entity must have written procedures for procurement transactions. These procedures must ensure that all solicitations:
 - (1) Incorporate a clear and accurate description of the technical requirements for the material, product, or service to be procured. Such description must not, in competitive procurements, contain features which unduly restrict competition. The description may include a statement of the qualitative nature of the material, product or service to be procured and, when necessary, must set forth those minimum essential characteristics and standards to which it must conform if it is to satisfy its intended use. Detailed product specifications should be avoided if at all possible. When it is impractical or uneconomical to make a clear and accurate description of the technical requirements, a "brand name or equivalent" description may be used as a means to define the performance or other salient requirements of procurement. The specific features of the named brand which must be met by offers must be clearly stated; and
 - (2) Identify all requirements which the offerors must fulfill and all other factors to be used in evaluating bids or proposals.
- (d) The non-Federal entity must ensure that all prequalified lists of persons, firms, or products which are used in acquiring goods and services are current and include enough

qualified sources to ensure maximum open and free competition. Also, the non-Federal entity must not preclude potential bidders from qualifying during the solicitation period.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

200.320 Methods of procurement to be followed.

The non-Federal entity must use one of the following methods of procurement.

- (a) Procurement by micro-purchases. Procurement by micro-purchase is the acquisition of supplies or services, the aggregate dollar amount of which does not exceed the micropurchase threshold (200.67 Micro-purchase). To the extent practicable, the non-Federal entity must distribute micro-purchases equitably among qualified suppliers. Micropurchases may be awarded without soliciting competitive quotations if the non-Federal entity considers the price to be reasonable.
- (b) Procurement by small purchase procedures. Small purchase procedures are those relatively simple and informal procurement methods for securing services, supplies, or other property that do not cost more than the Simplified Acquisition Threshold. If small purchase procedures are used, price or rate quotations must be obtained from an adequate number of qualified sources.
- (c) Procurement by sealed bids (formal advertising). Bids are publicly solicited and a firm fixed price contract (lump sum or unit price) is awarded to the responsible bidder whose bid, conforming with all the material terms and conditions of the invitation for bids, is the lowest in price. The sealed bid method is the preferred method for procuring construction, if the conditions in paragraph (c)(1) of this section apply.
 - (1) In order for sealed bidding to be feasible, the following conditions should be present:
 - (i) A complete, adequate, and realistic specification or purchase description is available;
 - (ii) Two or more responsible bidders are willing and able to compete effectively for the business; and
 - (iii) The procurement lends itself to a firm fixed price contract and the selection of the successful bidder can be made principally on the basis of price.
 - (2) If sealed bids are used, the following requirements apply:
 - (i) Bids must be solicited from an adequate number of known suppliers, providing them sufficient response time prior to the date set for opening the bids, for state, local, and tribal governments, the invitation for bids must be publically advertised;

- (ii) The invitation for bids, which will include any specifications and pertinent attachments, must define the items or services in order for the bidder to properly respond;
- (iii) All bids will be opened at the time and place prescribed in the invitation for bids, and for local and tribal governments, the bids must be opened publicly;
- (iv) A firm fixed price contract award will be made in writing to the lowest responsive and responsible bidder. Where specified in bidding documents, factors such as discounts, transportation cost, and life cycle costs must be considered in determining which bid is lowest. Payment discounts will only be used to determine the low bid when prior experience indicates that such discounts are usually taken advantage of; and
- (v) Any or all bids may be rejected if there is a sound documented reason.
- (d) Procurement by competitive proposals. The technique of competitive proposals is normally conducted with more than one source submitting an offer, and either a fixed price or cost-reimbursement type contract is awarded. It is generally used when conditions are not appropriate for the use of sealed bids. If this method is used, the following requirements apply:
 - (1) Requests for proposals must be publicized and identify all evaluation factors and their relative importance. Any response to publicized requests for proposals must be considered to the maximum extent practical;
 - (2) Proposals must be solicited from an adequate number of qualified sources;
 - (3) The non-Federal entity must have a written method for conducting technical evaluations of the proposals received and for selecting recipients;
 - (4) Contracts must be awarded to the responsible firm whose proposal is most advantageous to the program, with price and other factors considered; and
 - (5) The non-Federal entity may use competitive proposal procedures for qualificationsbased procurement of architectural/engineering (A/E) professional services whereby competitors' qualifications are evaluated and the most qualified competitor is selected, subject to negotiation of fair and reasonable compensation. The method, where price is not used as a selection factor, can only be used in procurement of A/E professional services. It cannot be used to purchase other types of services though A/E firms are a potential source to perform the proposed effort.
- (e) [Reserved]

- (f) Procurement by noncompetitive proposals. Procurement by noncompetitive proposals is procurement through solicitation of a proposal from only one source and may be used only when one or more of the following circumstances apply:
 - (1) The item is available only from a single source;
 - (2) The public exigency or emergency for the requirement will not permit a delay resulting from competitive solicitation;
 - (3) The Federal awarding agency or pass-through entity expressly authorizes noncompetitive proposals in response to a written request from the non-Federal entity; or
 - (4) After solicitation of a number of sources, competition is determined inadequate.
 - [78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

200.321 Contracting with small and minority businesses, women's business enterprises, and labor surplus area firms.

- (a) The non-Federal entity must take all necessary affirmative steps to assure that minority businesses, women's business enterprises, and labor surplus area firms are used when possible.
- (b) Affirmative steps must include:
 - (1) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;
 - (2) Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
 - (3) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
 - (4) Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises;
 - (5) Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce; and
 - (6) Requiring the prime contractor, if subcontracts are to be let, to take the affirmative steps listed in paragraphs (1) through (5) of this section.

200.322 Procurement of recovered materials.

A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act. The requirements of Section 6002 include procuring only items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired during the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75885, Dec. 19, 2014]

200.323 Contract cost and price.

- (a) The non-Federal entity must perform a cost or price analysis in connection with every procurement action in excess of the Simplified Acquisition Threshold including contract modifications. The method and degree of analysis is dependent on the facts surrounding the particular procurement situation, but as a starting point, the non-Federal entity must make independent estimates before receiving bids or proposals.
- (b) The non-Federal entity must negotiate profit as a separate element of the price for each contract in which there is no price competition and in all cases where cost analysis is performed. To establish a fair and reasonable profit, consideration must be given to the complexity of the work to be performed, the risk borne by the contractor, the contractor's investment, the amount of subcontracting, the quality of its record of past performance, and industry profit rates in the surrounding geographical area for similar work.
- (c) Costs or prices based on estimated costs for contracts under the Federal award are allowable only to the extent that costs incurred or cost estimates included in negotiated prices would be allowable for the non-Federal entity under Subpart E—Cost Principles of this part. The non-Federal entity may reference its own cost principles that comply with the Federal cost principles.
- (d) The cost plus a percentage of cost and percentage of construction cost methods of contracting must not be used.

200.324 Federal awarding agency or pass-through entity review.

(a) The non-Federal entity must make available, upon request of the Federal awarding agency or pass-through entity, technical specifications on proposed procurements where the Federal awarding agency or pass-through entity believes such review is needed to ensure that the item or service specified is the one being proposed for acquisition. This review generally will take place prior to the time the specification is incorporated into a solicitation document. However, if the non-Federal entity desires to have the review accomplished after a solicitation has been developed, the Federal awarding agency or pass-through entity may still review the specifications, with such review usually limited to the technical aspects of the proposed purchase.

- (b) The non-Federal entity must make available upon request, for the Federal awarding agency or pass-through entity pre-procurement review, procurement documents, such as requests for proposals or invitations for bids, or independent cost estimates, when:
 - (1) The non-Federal entity's procurement procedures or operation fails to comply with the procurement standards in this part;
 - (2) The procurement is expected to exceed the Simplified Acquisition Threshold and is to be awarded without competition or only one bid or offer is received in response to a solicitation;
 - (3) The procurement, which is expected to exceed the Simplified Acquisition Threshold, specifies a "brand name" product;
 - (4) The proposed contract is more than the Simplified Acquisition Threshold and is to be awarded to other than the apparent low bidder under a sealed bid procurement; or
 - (5) A proposed contract modification changes the scope of a contract or increases the contract amount by more than the Simplified Acquisition Threshold.
- (c) The non-Federal entity is exempt from the pre-procurement review in paragraph (b) of this section if the Federal awarding agency or pass-through entity determines that its procurement systems comply with the standards of this part.
 - (1) The non-Federal entity may request that its procurement system be reviewed by the Federal awarding agency or pass-through entity to determine whether its system meets these standards in order for its system to be certified. Generally, these reviews must occur where there is continuous high-dollar funding, and third party contracts are awarded on a regular basis;
 - (2) The non-Federal entity may self-certify its procurement system. Such self-certification must not limit the Federal awarding agency's right to survey the system. Under a self-certification procedure, the Federal awarding agency may rely on written assurances from the non-Federal entity that it is complying with these standards. The non-Federal entity must cite specific policies, procedures, regulations, or standards as being in compliance with these requirements and have its system available for review.

200.325 Bonding requirements.

For construction or facility improvement contracts or subcontracts exceeding the Simplified Acquisition Threshold, the Federal awarding agency or pass-through entity may accept the

bonding policy and requirements of the non-Federal entity provided that the Federal awarding agency or pass-through entity has made a determination that the Federal interest is adequately protected. If such a determination has not been made, the minimum requirements must be as follows:

- (a) A bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
- (b) A performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.
- (c) A payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided for in the contract.

200.326 Contract provisions.

The non-Federal entity's contracts must contain the applicable provisions described in Appendix II to Part 200—Contract Provisions for non-Federal Entity Contracts Under Federal Awards.

4. EQUIPMENT (2 CFR 200.313)

See also 200.439 Equipment and other capital expenditures.

- (a) Title. Subject to the obligations and conditions set forth in this section, title to equipment acquired under a Federal award will vest upon acquisition in the non-Federal entity. Unless a statute specifically authorizes the Federal agency to vest title in the non-Federal entity without further obligation to the Federal Government, and the Federal agency elects to do so, the title must be a conditional title. Title must vest in the non-Federal entity subject to the following conditions:
 - (1) Use the equipment for the authorized purposes of the project during the period of performance, or until the property is no longer needed for the purposes of the project.
 - (2) Not encumber the property without approval of the Federal awarding agency or passthrough entity.
 - (3) Use and dispose of the property in accordance with paragraphs (b), (c) and (e) of this section.

(b) A state must use, manage and dispose of equipment acquired under a Federal award by the state in accordance with state laws and procedures. Other non-Federal entities must follow paragraphs (c) through (e) of this section.

(c) Use.

- (1) Equipment must be used by the non-Federal entity in the program or project for which it was acquired as long as needed, whether or not the project or program continues to be supported by the Federal award, and the non-Federal entity must not encumber the property without prior approval of the Federal awarding agency. When no longer needed for the original program or project, the equipment may be used in other activities supported by the Federal awarding agency, in the following order of priority:
 - (i) Activities under a Federal award from the Federal awarding agency which funded the original program or project, then
 - (ii) Activities under Federal awards from other Federal awarding agencies. This includes consolidated equipment for information technology systems.
- (2) During the time that equipment is used on the project or program for which it was acquired, the non-Federal entity must also make equipment available for use on other projects or programs currently or previously supported by the Federal Government, provided that such use will not interfere with the work on the projects or program for which it was originally acquired. First preference for other use must be given to other programs or projects supported by Federal awarding agency that financed the equipment and second preference must be given to programs or projects under Federal awards from other Federal awarding agencies. Use for non-federally-funded programs or projects is also permissible. User fees should be considered if appropriate.
- (3) Notwithstanding the encouragement in 200.307 Program income to earn program income, the non-Federal entity must not use equipment acquired with the Federal award to provide services for a fee that is less than private companies charge for equivalent services unless specifically authorized by Federal statute for as long as the Federal Government retains an interest in the equipment.
- (4) When acquiring replacement equipment, the non-Federal entity may use the equipment to be replaced as a trade-in or sell the property and use the proceeds to offset the cost of the replacement property.
- (d) Management requirements. Procedures for managing equipment (including replacement equipment), whether acquired in whole or in part under a Federal award, until disposition takes place will, as a minimum, meet the following requirements:

- (1) Property records must be maintained that include a description of the property, a serial number or other identification number, the source of funding for the property (including the FAIN), who holds title, the acquisition date, and cost of the property, percentage of Federal participation in the project costs for the Federal award under which the property was acquired, the location, use and condition of the property, and any ultimate disposition data including the date of disposal and sale price of the property.
- (2) A physical inventory of the property must be taken and the results reconciled with the property records at least once every two years.
- (3) A control system must be developed to ensure adequate safeguards to prevent loss, damage, or theft of the property. Any loss, damage, or theft must be investigated.
- (4) Adequate maintenance procedures must be developed to keep the property in good condition.
- (5) If the non-Federal entity is authorized or required to sell the property, proper sales procedures must be established to ensure the highest possible return.
- (e) Disposition. When original or replacement equipment acquired under a Federal award is no longer needed for the original project or program or for other activities currently or previously supported by a Federal awarding agency, except as otherwise provided in Federal statutes, regulations, or Federal awarding agency disposition instructions, the non-Federal entity must request disposition instructions from the Federal awarding agency if required by the terms and conditions of the Federal award. Disposition of the equipment will be made as follows, in accordance with Federal awarding agency disposition instructions:
 - (1) Items of equipment with a current per unit fair market value of \$5,000 or less may be retained, sold or otherwise disposed of with no further obligation to the Federal awarding agency.
 - (2) Except as provided in 200.312 Federally-owned and exempt property, paragraph (b), or if the Federal awarding agency fails to provide requested disposition instructions within 120 days, items of equipment with a current per-unit fair-market value in excess of \$5,000 may be retained by the non-Federal entity or sold. The Federal awarding agency is entitled to an amount calculated by multiplying the current market value or proceeds from sale by the Federal awarding agency's percentage of participation in the cost of the original purchase. If the equipment is sold, the Federal awarding agency may permit the non-Federal entity to deduct and retain from the Federal share \$500 or ten percent of the proceeds, whichever is less, for its selling and handling expenses.
 - (3) The non-Federal entity may transfer title to the property to the Federal Government or to an eligible third party provided that, in such cases, the non-Federal entity must be

entitled to compensation for its attributable percentage of the current fair market value of the property.

(4) In cases where a non-Federal entity fails to take appropriate disposition actions, the Federal awarding agency may direct the non-Federal entity to take disposition actions.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75884, Dec. 19, 2014]

5. SUPPLIES (2 CFR 200.314)

See also 200.453 Materials and supplies costs, including costs of computing devices.

- (a) Title to supplies will vest in the non-Federal entity upon acquisition. If there is a residual inventory of unused supplies exceeding \$5,000 in total aggregate value upon termination or completion of the project or program and the supplies are not needed for any other Federal award, the non-Federal entity must retain the supplies for use on other activities or sell them, but must, in either case, compensate the Federal Government for its share. The amount of compensation must be computed in the same manner as for equipment. See 200.313 Equipment, paragraph (e)(2) for the calculation methodology.
- (b) As long as the Federal Government retains an interest in the supplies, the non-Federal entity must not use supplies acquired under a Federal award to provide services to other organizations for a fee that is less than private companies charge for equivalent services, unless specifically authorized by Federal statute.

6. INSPECTION

Reclamation has the right to inspect and evaluate the work performed or being performed under this Agreement, and the premises where the work is being performed, at all reasonable times and in a manner that will not unduly delay the work. If Reclamation performs inspection or evaluation on the premises of the Recipient or a sub-Recipient, the Recipient shall furnish and shall require sub-recipients to furnish all reasonable facilities and assistance for the safe and convenient performance of these duties.

7. AUDIT REQUIREMENTS (2 CFR 200.501)

- (a) Audit required. A non-Federal entity that expends \$750,000 or more during the non-Federal entity's fiscal year in Federal awards must have a single or program-specific audit conducted for that year in accordance with the provisions of this part.
- (b) Single audit. A non-Federal entity that expends \$750,000 or more during the non-Federal entity's fiscal year in Federal awards must have a single audit conducted in accordance with 200.514 Scope of audit except when it elects to have a program-specific audit conducted in accordance with paragraph (c) of this section.

- (c) Program-specific audit election. When an auditee expends Federal awards under only one Federal program (excluding R&D) and the Federal program's statutes, regulations, or the terms and conditions of the Federal award do not require a financial statement audit of the auditee, the auditee may elect to have a program-specific audit conducted in accordance with 200.507 Program-specific audits. A program-specific audit may not be elected for R&D unless all of the Federal awards expended were received from the same Federal agency, or the same Federal agency and the same pass-through entity, and that Federal agency, or pass-through entity in the case of a subrecipient, approves in advance a program-specific audit.
- (d) Exemption when Federal awards expended are less than \$750,000. A non-Federal entity that expends less than \$750,000 during the non-Federal entity's fiscal year in Federal awards is exempt from Federal audit requirements for that year, except as noted in 200.503 Relation to other audit requirements, but records must be available for review or audit by appropriate officials of the Federal agency, pass-through entity, and Government Accountability Office (GAO).
- (e) Federally Funded Research and Development Centers (FFRDC). Management of an auditee that owns or operates a FFRDC may elect to treat the FFRDC as a separate entity for purposes of this part.
- (f) Subrecipients and Contractors. An auditee may simultaneously be a recipient, a subrecipient, and a contractor. Federal awards expended as a recipient or a subrecipient are subject to audit under this part. The payments received for goods or services provided as a contractor are not Federal awards. Section 200.330 Subrecipient and contractor determinations sets forth the considerations in determining whether payments constitute a Federal award or a payment for goods or services provided as a contractor.
- (g) Compliance responsibility for contractors. In most cases, the auditee's compliance responsibility for contractors is only to ensure that the procurement, receipt, and payment for goods and services comply with Federal statutes, regulations, and the terms and conditions of Federal awards. Federal award compliance requirements normally do not pass through to contractors. However, the auditee is responsible for ensuring compliance for procurement transactions which are structured such that the contractor is responsible for program compliance or the contractor's records must be reviewed to determine program compliance. Also, when these procurement transactions relate to a major program, the scope of the audit must include determining whether these transactions are in compliance with Federal statutes, regulations, and the terms and conditions of Federal awards.
- (h) For-profit subrecipient. Since this part does not apply to for-profit subrecipients, the passthrough entity is responsible for establishing requirements, as necessary, to ensure compliance by for-profit subrecipients. The agreement with the for-profit subrecipient must describe applicable compliance requirements and the for-profit subrecipient's compliance responsibility. Methods to ensure compliance for Federal awards made to for-

profit subrecipients may include pre-award audits, monitoring during the agreement, and post-award audits. See also 200.331 Requirements for pass-through entities.

[78 FR 78608, Dec. 26, 2013, as amended at 79 FR 75887, Dec. 19, 2014]

8. REMEDIES FOR NONCOMPLIANCE (2 CFR 200.338)

200.338 Remedies for noncompliance.

If a non-Federal entity fails to comply with Federal statutes, regulations or the terms and conditions of a Federal award, the Federal awarding agency or pass-through entity may impose additional conditions, as described in 200.207 Specific conditions. If the Federal awarding agency or pass-through entity determines that noncompliance cannot be remedied by imposing additional conditions, the Federal awarding agency or pass-through entity may take one or more of the following actions, as appropriate in the circumstances:

- (a) Temporarily withhold cash payments pending correction of the deficiency by the non-Federal entity or more severe enforcement action by the Federal awarding agency or pass-through entity.
- (b) Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.
- (c) Wholly or partly suspend or terminate the Federal award.
- (d) Initiate suspension or debarment proceedings as authorized under 2 CFR part 180 and Federal awarding agency regulations (or in the case of a pass-through entity, recommend such a proceeding be initiated by a Federal awarding agency).
- (e) Withhold further Federal awards for the project or program.
- (f) Take other remedies that may be legally available.

9. TERMINATION (2 CFR 200.339)

- (a) The Federal award may be terminated in whole or in part as follows:
 - (1) By the Federal awarding agency or pass-through entity, if a non-Federal entity fails to comply with the terms and conditions of a Federal award;
 - (2) By the Federal awarding agency or pass-through entity for cause;
 - (3) By the Federal awarding agency or pass-through entity with the consent of the non-Federal entity, in which case the two parties must agree upon the termination conditions, including the effective date and, in the case of partial termination, the portion to be terminated; or

- (4) By the non-Federal entity upon sending to the Federal awarding agency or passthrough entity written notification setting forth the reasons for such termination, the effective date, and, in the case of partial termination, the portion to be terminated. However, if the Federal awarding agency or pass-through entity determines in the case of partial termination that the reduced or modified portion of the Federal award or subaward will not accomplish the purposes for which the Federal award was made, the Federal awarding agency or pass-through entity may terminate the Federal award in its entirety.
- (b) When a Federal award is terminated or partially terminated, both the Federal awarding agency or pass-through entity and the non-Federal entity remain responsible for compliance with the requirements in 200.343 Closeout and 200.344 Post-closeout adjustments and continuing responsibilities.

10. DEBARMENT AND SUSPENSION (2 CFR 1400)

The Department of the Interior regulations at 2 CFR 1400—Governmentwide Debarment and Suspension (Nonprocurement), which adopt the common rule for the governmentwide system of debarment and suspension for nonprocurement activities, are hereby incorporated by reference and made a part of this Agreement. By entering into this grant or cooperative Agreement with the Bureau of Reclamation, the Recipient agrees to comply with 2 CFR 1400, Subpart C, and agrees to include a similar term or condition in all lower-tier covered transactions. These regulations are available at http://www.gpoaccess.gov/ecfr/.

11. DRUG-FREE WORKPLACE (2 CFR 182 and 1401)

The Department of the Interior regulations at 2 CFR 1401—Governmentwide Requirements for Drug-Free Workplace (Financial Assistance), which adopt the portion of the Drug-Free Workplace Act of 1988 (41 U.S.C. 701 et seq, as amended) applicable to grants and cooperative agreements, are hereby incorporated by reference and made a part of this agreement. By entering into this grant or cooperative agreement with the Bureau of Reclamation, the Recipient agrees to comply with 2 CFR 182.

12. ASSURANCES AND CERTIFICATIONS INCORPORATED BY REFERENCE

The provisions of the Assurances, SF 424B or SF 424D as applicable, executed by the Recipient in connection with this Agreement shall apply with full force and effect to this Agreement. All anti-discrimination and equal opportunity statutes, regulations, and Executive Orders that apply to the expenditure of funds under Federal contracts, grants, and cooperative Agreements, loans, and other forms of Federal assistance. The Recipient shall comply with Title VI or the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and any program-specific statutes with anti-discrimination requirements. The Recipient shall comply with civil rights laws including, but not limited to, the Fair Housing Act, the Fair Credit Reporting Act, the Americans with Disabilities Act, Title VII of the Civil Rights Act of 1964, the Equal Educational Opportunities Act, the Age Discrimination in Employment Act, and the Uniform Relocation Act.

Such Assurances also include, but are not limited to, the promise to comply with all applicable Federal statutes and orders relating to nondiscrimination in employment, assistance, and housing; the Hatch Act; Federal wage and hour laws and regulations and work place safety standards; Federal environmental laws and regulations and the Endangered Species Act; and Federal protection of rivers and waterways and historic and archeological preservation.

13. COVENANT AGAINST CONTINGENT FEES

The Recipient warrants that no person or agency has been employed or retained to solicit or secure this Agreement upon an Agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide offices established and maintained by the Recipient for the purpose of securing Agreements or business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability or, in its discretion, to deduct from the Agreement amount, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

14. TRAFFICKING VICTIMS PROTECTION ACT OF 2000 (2 CFR 175.15)

Trafficking in persons.

- (a) *Provisions applicable to a recipient that is a private entity.*
 - (1) You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not
 - (i) Engage in severe forms of trafficking in persons during the period of time that the award is in effect;
 - (ii) Procure a commercial sex act during the period of time that the award is in effect; or
 - (iii) Use forced labor in the performance of the award or subawards under the award.
 - (2) We as the Federal awarding agency may unilaterally terminate this award, without penalty, if you or a subrecipient that is a private entity
 - (i) Is determined to have violated a prohibition in paragraph a.1 of this award term; or
 - (ii) Has an employee who is determined by the agency official authorized to terminate the award to have violated a prohibition in paragraph a.1 of this award term through conduct that is either:
 - (A) Associated with performance under this award; or

- (B) Imputed to you or the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 CFR part 1400.
- (b) Provision applicable to a recipient other than a private entity. We as the Federal awarding agency may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity—
 - (1) Is determined to have violated an applicable prohibition in paragraph a.1 of this award term; or
 - (2) Has an employee who is determined by the agency official authorized to terminate the award to have violated an applicable prohibition in paragraph a.1 of this award term through conduct that is either:
 - (i) Associated with performance under this award; or
 - (ii) Imputed to the subrecipient using the standards and due process for imputing the conduct of an individual to an organization that are provided in 2 CFR part 180, "OMB Guidelines to Agencies on Governmentwide Debarment and Suspension (Nonprocurement)," as implemented by our agency at 2 CFR part 1400.
- (c) Provisions applicable to any recipient.
 - (1) You must inform us immediately of any information you receive from any source alleging a violation of a prohibition in paragraph a.1 of this award term.
 - (2) Our right to terminate unilaterally that is described in paragraph a.2 or b of this section:
 - (i) Implements section 106(g) of the Trafficking Victims Protection Act of 2000 (TVPA), as amended (22 U.S.C. 7104(g)), and
 - (ii) Is in addition to all other remedies for noncompliance that are available to us under this award.
 - (3) You must include the requirements of paragraph a.1 of this award term in any subaward you make to a private entity.
- (d) *Definitions*. For purposes of this award term:
 - (1) "Employee" means either:

- (i) An individual employed by you or a subrecipient who is engaged in the performance of the project or program under this award; or
- (ii) Another person engaged in the performance of the project or program under this award and not compensated by you including, but not limited to, a volunteer or individual whose services are contributed by a third party as an in-kind contribution toward cost sharing or matching requirements.
- (2) "Forced labor" means labor obtained by any of the following methods: the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.
- (3) "Private entity":
 - (i) Means any entity other than a state, local government, Indian tribe, or foreign public entity, as those terms are defined in 2 CFR 175.25.
 - (ii) Includes:
 - (A) A nonprofit organization, including any nonprofit institution of higher education, hospital, or tribal organization other than one included in the definition of Indian tribe at 2 CFR 175.25(b).
 - (B) A for-profit organization.
- (4) "Severe forms of trafficking in persons," "commercial sex act," and "coercion" have the meanings given at section 103 of the TVPA, as amended (22 U.S.C. 7102).

15. NEW RESTRICTIONS ON LOBBYING (43 CFR 18)

The Recipient agrees to comply with 43 CFR 18, New Restrictions on Lobbying, including the following certification:

- (a) No Federal appropriated funds have been paid or will be paid, by or on behalf of the Recipient, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (b) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative

agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions.

(c) The Recipient shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

16. UNIFORM RELOCATION ASSISTANCE AND REAL PROPERTY ACQUISITION POLICIES ACT OF 1970 (URA) (42 USC 4601 et seq.)

- (a) The Uniform Relocation Assistance Act (URA), 42 U.S.C. 4601 et seq., as amended, requires certain assurances for Reclamation funded land acquisition projects conducted by a Recipient that cause the displacement of persons, businesses, or farm operations. Because Reclamation funds only support acquisition of property or interests in property from willing sellers, it is not anticipated that Reclamation funds will result in any "displaced persons," as defined under the URA.
- (b) However, if Reclamation funds are used for the acquisition of real property that results in displacement, the URA requires Recipients to ensure that reasonable relocation payments and other remedies will be provided to any displaced person. Further, when acquiring real property, Recipients must be guided, to the greatest extent practicable, by the land acquisition policies in 42 U.S.C. 4651.
- (c) Exemptions to the URA and 49 CFR Part 24
 - (1) The URA provides for an exemption to the appraisal, review and certification rules for those land acquisitions classified as "voluntary transactions." Such "voluntary transactions" are classified as those that do not involve an exercise of eminent domain authority on behalf of a Recipient, and must meet the conditions specified at 49 CFR 24.101(b)(1)(i)-(iv).
 - (2) For any land acquisition undertaken by a Recipient that receives Reclamation funds, but does not have authority to acquire the real property by eminent domain, to be exempt from the requirements of 49 CFR Part 24 the Recipient must:
 - (i) provide written notification to the owner that it will not acquire the property in the event negotiations fail to result in an amicable agreement, and;
 - (ii) inform the owner in writing of what it believes to be the market value of the property

(d) Review of Land Acquisition Appraisals. Reclamation reserves the right to review any land appraisal whether or not such review is required under the URA or 49 CFR 24.104. Such reviews may be conducted by the Department of the Interior's Appraisal Services Directorate or a Reclamation authorized designee. When Reclamation determines that a review of the original appraisal is necessary, Reclamation will notify the Recipient and provide an estimated completion date of the initial appraisal review.

17. SYSTEM FOR AWARD MANAGEMENT and Universal Identifier Requirements (2 CFR 25, Appendix A)

A. Requirement for System for Award Management

Unless you are exempted from this requirement under 2 CFR 25.110, you as the recipient must maintain the currency of your information in the SAM until you submit the final financial report required under this award or receive the final payment, whichever is later. This requires that you review and update the information at least annually after the initial registration, and more frequently if required by changes in your information or another award term.

B. Requirement for unique entity identifier

If you are authorized to make subawards under this award, you:

- 1. Must notify potential subrecipients that no entity (see definition in paragraph C of this award term) may receive a subaward from you unless the entity has provided its unique entity identifier to you.
- 2. May not make a subaward to an entity unless the entity has provided its unique entity identifier to you.

C. Definitions

For purposes of this award term:

- 1. System for Award Management (SAM) means the Federal repository into which an entity must provide information required for the conduct of business as a recipient. Additional information about registration procedures may be found at the SAM Internet site (currently at http://www.sam.gov).
- 2. Unique entity identifier means the identifier required for SAM registration to uniquely identify business entities.
- 3. Entity, as it is used in this award term, means all of the following, as defined at 2 CFR part 25, subpart C:

- a. A Governmental organization, which is a State, local government, or Indian Tribe;
- b. A foreign public entity;
- c. A domestic or foreign nonprofit organization;
- d. A domestic or foreign for-profit organization; and
- e. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.
- 4. Subaward:
 - a. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
 - b. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see 2 CFR 200.330).
 - c. A subaward may be provided through any legal agreement, including an agreement that you consider a contract.
- 5. Subrecipient means an entity that:
 - a. Receives a subaward from you under this award; and
 - b. Is accountable to you for the use of the Federal funds provided by the subaward.

18. PROHIBITION ON TEXT MESSAGING AND USING ELECTRONIC EQUIPMENT SUPPLIED BY THE GOVERNMENT WHILE DRIVING

Executive Order 13513, *Federal Leadership On Reducing Text Messaging While Driving*, was signed by President Barack Obama on October 1, 2009 (ref: http://edocket.access.gpo.gov/2009/pdf/E9-24203.pdf). This Executive Order introduces a Federal Government-wide prohibition on the use of text messaging while driving on official business or while using Government-supplied equipment. Additional guidance enforcing the ban will be issued at a later date. In the meantime, please adopt and enforce policies that immediately ban text messaging while driving company-owned or rented vehicles, government-owned or leased vehicles, or while driving privately owned vehicles when on official government business or when performing any work for or on behalf of the government.

19. REPORTING SUBAWARDS AND EXECUTIVE COMPENSATION (2 CFR 170 APPENDIX A)

- I. Reporting Subawards and Executive Compensation.
 - a. Reporting of first-tier subawards.
 - 1. *Applicability*. Unless you are exempt as provided in paragraph d. of this award term, you must report each action that obligates \$25,000 or more in Federal funds that does not include Recovery funds (as defined in section 1512(a)(2) of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5) for a subaward to an entity (see definitions in paragraph e. of this award term).
 - 2. Where and when to report.
 - i. You must report each obligating action described in paragraph a.1. of this award term to <u>http://www.fsrs.gov</u>.
 - ii. For subaward information, report no later than the end of the month following the month in which the obligation was made. (For example, if the obligation was made on November 7, 2010, the obligation must be reported by no later than December 31, 2010.)
 - 3. *What to report*. You must report the information about each obligating action that the submission instructions posted at <u>http://www.fsrs.gov</u> specify.
 - b. Reporting Total Compensation of Recipient Executives.
 - 1. *Applicability and what to report*. You must report total compensation for each of your five most highly compensated executives for the preceding completed fiscal year, if
 - i. the total Federal funding authorized to date under this award is \$25,000 or more;
 - ii. in the preceding fiscal year, you received—
 - (A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
 - (B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and

- iii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at *http://www.sec.gov/answers/execomp.htm.*)
- 2. *Where and when to report.* You must report executive total compensation described in paragraph b.1. of this award term:
 - i. As part of your registration profile at <u>http://www.ccr.gov</u>.
 - ii. By the end of the month following the month in which this award is made, and annually thereafter.
- c. Reporting of Total Compensation of Subrecipient Executives.
 - 1. *Applicability and what to report.* Unless you are exempt as provided in paragraph d. of this award term, for each first-tier subrecipient under this award, you shall report the names and total compensation of each of the subrecipient's five most highly compensated executives for the subrecipient's preceding completed fiscal year, if
 - i. in the subrecipient's preceding fiscal year, the subrecipient received-
 - (A) 80 percent or more of its annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards); and
 - (B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards); and
 - ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at *http://www.sec.gov/answers/execomp.htm.*)
 - 2. *Where and when to report.* You must report subrecipient executive total compensation described in paragraph c.1. of this award term:

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- i. To the recipient.
- ii. By the end of the month following the month during which you make the subaward. For example, if a subaward is obligated on any date during the month of October of a given year (*i.e.*, between October 1 and 31), you must report any required compensation information of the subrecipient by November 30 of that year.
- d. Exemptions

If, in the previous tax year, you had gross income, from all sources, under \$300,000, you are exempt from the requirements to report:

- i. Subawards, and
- ii. The total compensation of the five most highly compensated executives of any subrecipient.
- e. Definitions. For purposes of this award term:
 - 1. *Entity* means all of the following, as defined in 2 CFR part 25:
 - i. A Governmental organization, which is a State, local government, or Indian tribe;
 - ii. A foreign public entity;
 - iii. A domestic or foreign nonprofit organization;
 - iv. A domestic or foreign for-profit organization;
 - v. A Federal agency, but only as a subrecipient under an award or subaward to a non-Federal entity.
 - 2. *Executive* means officers, managing partners, or any other employees in management positions.
 - 3. *Subaward*:
 - i. This term means a legal instrument to provide support for the performance of any portion of the substantive project or program for which you received this award and that you as the recipient award to an eligible subrecipient.
 - ii. The term does not include your procurement of property and services needed to carry out the project or program (for further explanation, see Sec. ____.210

of the attachment to OMB Circular A-133, "Audits of States, Local Governments, and Non-Profit Organizations").

- iii. A subaward may be provided through any legal agreement, including an agreement that you or a subrecipient considers a contract.
- 4. *Subrecipient* means an entity that:
 - i. Receives a subaward from you (the recipient) under this award; and
 - ii. Is accountable to you for the use of the Federal funds provided by the subaward.
- 5. *Total compensation* means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):
 - i. Salary and bonus.
 - ii. *Awards of stock, stock options, and stock appreciation rights.* Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.
 - iii. *Earnings for services under non-equity incentive plans*. This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.
 - iv. *Change in pension value.* This is the change in present value of defined benefit and actuarial pension plans.
 - v. Above-market earnings on deferred compensation which is not tax-qualified.
 - vi. Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

20. RECIPIENT EMPLOYEE WHISTLEBLOWER RIGHTS AND REQUIREMENT TO INFORM EMPLOYEES OF WHISTLEBLOWER RIGHTS (SEP 2013)

(a) This award and employees working on this financial assistance agreement will be subject to the whistleblower rights and remedies in the pilot program on Award Recipient employee whistleblower protections established at 41 U.S.C. 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (Pub.L. 112-239).

- (b) The Award Recipient shall inform its employees in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C 4712.
- (c) The Award Recipient shall insert the substance of this clause, including this paragraph (c), in all subawards or subcontracts over the simplified acquisition threshold. 48 CFR 52.203-17 (as referenced in 48 CFR 3.908-9).

21. RECIPIENT INTEGRITY AND PERFORMANCE MATTERS (APPENDIX XII to 2 CFR Part 200)

A. Reporting of Matters Related to Recipient Integrity and Performance

1. General Reporting Requirement

If the total value of your currently active grants, cooperative agreements, and procurement contracts from all Federal awarding agencies exceeds \$10,000,000 for any period of time during the period of performance of this Federal award, then you as the recipient during that period of time must maintain the currency of information reported to the System for Award Management (SAM) that is made available in the designated integrity and performance system (currently the Federal Awardee Performance and Integrity Information System (FAPIIS)) about civil, criminal, or administrative proceedings described in paragraph 2 of this award term and condition. This is a statutory requirement under section 872 of Public Law 110-417, as amended (41 U.S.C. 2313). As required by section 3010 of Public Law 111-212, all information posted in the designated integrity and performance reviews required for Federal procurement contracts, will be publicly available.

2. Proceedings About Which You Must Report

Submit the information required about each proceeding that:

- a. Is in connection with the award or performance of a grant, cooperative agreement, or procurement contract from the Federal Government;
- b. Reached its final disposition during the most recent five year period; and
- c. Is one of the following:
 - (1) A criminal proceeding that resulted in a conviction, as defined in paragraph 5 of this award term and condition;
 - (2) A civil proceeding that resulted in a finding of fault and liability and payment of a monetary fine, penalty, reimbursement, restitution, or damages of \$5,000 or more;

- (3) An administrative proceeding, as defined in paragraph 5. of this award term and condition, that resulted in a finding of fault and liability and your payment of either a monetary fine or penalty of \$5,000 or more or reimbursement, restitution, or damages in excess of \$100,000; or
- (4) Any other criminal, civil, or administrative proceeding if:
 - (i) It could have led to an outcome described in paragraph 2.c.(1), (2), or (3) of this award term and condition;
 - (ii) It had a different disposition arrived at by consent or compromise with an acknowledgment of fault on your part; and
 - (iii) The requirement in this award term and condition to disclose information about the proceeding does not conflict with applicable laws and regulations.
- 3. Reporting Procedures

Enter in the SAM Entity Management area the information that SAM requires about each proceeding described in paragraph 2 of this award term and condition. You do not need to submit the information a second time under assistance awards that you received if you already provided the information through SAM because you were required to do so under Federal procurement contracts that you were awarded.

4. Reporting Frequency

During any period of time when you are subject to the requirement in paragraph 1 of this award term and condition, you must report proceedings information through SAM for the most recent five year period, either to report new information about any proceeding(s) that you have not reported previously or affirm that there is no new information to report. Recipients that have Federal contract, grant, and cooperative agreement awards with a cumulative total value greater than \$10,000,000 must disclose semiannually any information about the criminal, civil, and administrative proceedings.

5. Definitions

For purposes of this award term and condition:

a. Administrative proceeding means a non-judicial process that is adjudicatory in nature in order to make a determination of fault or liability (e.g., Securities and Exchange Commission Administrative proceedings, Civilian Board of Contract Appeals proceedings, and Armed Services Board of Contract Appeals proceedings). This includes proceedings at the Federal and State level but only in connection with performance of a Federal contract or grant. It does not include audits, site visits, corrective plans, or inspection of deliverables.

- b. Conviction, for purposes of this award term and condition, means a judgment or conviction of a criminal offense by any court of competent jurisdiction, whether entered upon a verdict or a plea, and includes a conviction entered upon a plea of nolo contendere.
- c. Total value of currently active grants, cooperative agreements, and procurement contracts includes—

(1) Only the Federal share of the funding under any Federal award with a recipient cost share or match; and

(2) The value of all expected funding increments under a Federal award and options, even if not yet exercised.

22. CONFLICTS OF INTEREST

- (a) Applicability.
 - (1) This section intends to ensure that non-Federal entities and their employees take appropriate steps to avoid conflicts of interest in their responsibilities under or with respect to Federal financial assistance agreements.
 - (2) In the procurement of supplies, equipment, construction, and services by recipients and by subrecipients, the conflict of interest provisions in 2 CFR 200.318 apply.
- (b) Requirements.
 - (1) Non-Federal entities must avoid prohibited conflicts of interest, including any significant financial interests that could cause a reasonable person to question the recipient's ability to provide impartial, technically sound, and objective performance under or with respect to a Federal financial assistance agreement.
 - (2) In addition to any other prohibitions that may apply with respect to conflicts of interest, no key official of an actual or proposed recipient or subrecipient, who is substantially involved in the proposal or project, may have been a former Federal employee who, within the last one (1) year, participated personally and substantially in the evaluation, award, or administration of an award with respect to that recipient or subrecipient or in development of the requirement leading to the funding announcement.
 - (3) No actual or prospective recipient or subrecipient may solicit, obtain, or use nonpublic information regarding the evaluation, award, or administration of an award to

that recipient or subrecipient or the development of a Federal financial assistance opportunity that may be of competitive interest to that recipient or subrecipient.

- (c) Notification.
 - (1) Non-Federal entities, including applicants for financial assistance awards, must disclose in writing any conflict of interest to the DOI awarding agency or pass-through entity in accordance with 2 CFR 200.112, Conflicts of Interest.
 - (2) Recipients must establish internal controls that include, at a minimum, procedures to identify, disclose, and mitigate or eliminate identified conflicts of interest. The recipient is responsible for notifying the Financial Assistance Officer in writing of any conflicts of interest that may arise during the life of the award, including those that have been reported by subrecipients.

23. DATA AVAILABILITY

- (a) Applicability. The Department of the Interior is committed to basing its decisions on the best available science and providing the American people with enough information to thoughtfully and substantively evaluate the data, methodology, and analysis used by the Department to inform its decisions.
- (b) Use of Data. The regulations at 2 CFR 200.315 apply to data produced under a Federal award, including the provision that the Federal Government has the right to obtain, reproduce, publish, or otherwise use the data produced under a Federal award as well as authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.
- (c) Availability of Data. The recipient shall make the data produced under this award and any subaward(s) available to the Government for public release, consistent with applicable law, to allow meaningful third-party evaluation and reproduction of the following:
 - (i) The scientific data relied upon;
 - (ii) The analysis relied upon; and
 - (iii) The methodology, including models, used to gather and analyze data.