Appendix 2A
Consequence of No Action

JACOBS

ch2m

Final Technical Memorandum

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Subject	**Consequence of No Action**
Project Name	Renewable Placer: Waste Action Plan
Attention	Western Placer Waste Management Authority
From	Janet Goodrich/CH2M Lyndsey Lopez/CH2M
Date	February 6, 2019
Copies to	Project File

This technical memorandum summarizes the materials that were prepared to document the potential consequence of "No Action." The majority of this information was developed in April 2018.

As Western Placer Waste Management Authority (WPWMA) staff continued to engage key stakeholders, it became increasingly clear that ongoing dialog of the WPWMA's master planning effort needed to include a discussion of the consequences of delaying or foregoing modifications to the WPWMA's facilities. Staff and the CH2M Team identified several possible operating scenarios assuming the master planning and subsequent California Environmental Quality Act (CEQA) efforts were not successful and that future operations were limited to the currently permitted facilities. The table in Attachment 1 summarizes the various scenarios.

These scenarios acknowledge that the WPWMA will not be able to fully meet the needs of the Member Agencies in the long term. Providing ongoing services constrained to only the existing site would necessitate either modifying and expanding materials recovery facility (MRF) and composting operations at the expense of landfill capacity or phasing out MRF and composting operations to maximize landfill capacity. In the former scenario, an alternative, existing, non-WPWMA disposal location would need to be identified that could accept the WPWMA's waste in the future. In the latter scenario, the Member Agencies would likely need to arrange for their own waste diversion and processing operations to meet regulatory and legal mandates.

After an initial discussion with the Member Agency Advisory Committee (MAAC), the general consensus was that, as long as future disposal capacity could be identified at a third-party landfill, it was preferred the WPWMA continue to provide waste processing and diversion services by maintaining a viable MRF and composting operation. WPWMA Staff and CH2M conducted preliminary research on possible alternative disposal locations for the purposes of estimating the budgetary-level cost impact of offsite disposal. The results of this preliminary research are shown in Attachment 2. Staff and CH2M looked at 10 alternative disposal sites with publicly available information. Out of these 10 sites, several existing facilities have capacity currently (can accept additional tonnage daily in permit and have capacity to accept a large amount of waste). WPWMA would need new infrastructure to enable use of these sites (either long-haul or rail-haul to transport waste). There is no guarantee that the capacity will be available when WPWMA needs it or that the owners of these facilities would be willing or able to accept the WPWMA's materials. Based on this preliminary evaluation, it appears to be technically feasible, but we do not have a detailed economic evaluation nor commitments from receiving facilities.

Attachment 1
No Action Potential Scenarios

"No Project" Description	Collection	Transfer & Process	Disposal	Notes
No Project 1a – Long Term MRF/Transfer/Limited Organics & Construction and Demolition (C&D) Phased closing of WPWMA Facility (Except for MRF and compost facility with **NO compost or C&D expansion**) CEQA likely required for Transfer	No change for **One Big Bin** **Self Haul** accepted for same materials as current; continue using existing area, may do small upgrades, no major changes Some **organics** managed by jurisdictions Some **C&D** managed by jurisdictions	**MRF** becomes **MRF/Transfer**; upgrades for transfer required **Compost** facility upgrades needed to meet current regulatory requirements; does not include expansion and will not be adequately sized to address all **organics** needs of jurisdictions to comply with pending regulatory requirements. Some **organics** will need to be managed separately, by jurisdictions **C&D** facility will not be sized to handle all C&D needs of jurisdictions; some **C&D** will need to be managed separately, by jurisdictions	Western Regional Sanitary (WRS) **Landfill** closes when existing capacity is filled After closed, long-haul municipal solid waste (**MSW**) to other existing disposal facility under contract[a]	• Keeping existing compost and C&D areas sacrifices permitted landfill capacity resulting in the landfill closing sooner than permitted capacity dictates • If not privatized, siting and developing facilities is a 5- to 10-year minimum, if feasible (note NEW facilities infrequently sited in California in last 30 years) • Lose at least partial control of rates for organics and C&D and ultimately disposal • Puts partial burden on jurisdictions to achieve mandates and their own solid waste management plans. Must provide their own system, supply staffing to complete all activities, and hire their own contractors.
No Project 1b – Long Term MRF/Transfer/Organics & C&D with Expansions Phased closing of WPWMA Facility (Except for MRF, C&D and compost facility **with compost and C&D expansion**) CEQA needed for C&D and compost facility expansions.	No change for **One Big Bin, organics, or C&D** **Self Haul** accepted for same materials as current; continue using existing area, may do small upgrades, no major changes	**MRF** becomes **MRF/Transfer**; upgrades for transfer required. Also need to expand & upgrade to address regulatory requirements for **organics** and provide adequate organics capacity for all jurisdictions **C&D** facility will be expanded to address needs of jurisdictions	WRS **Landfill** capacity sacrificed to provide capacity for recycling, organics, and C&D After landfill capacity filled, long-haul **MSW** to other existing facility under contract[a]	• Expanding existing compost and C&D areas sacrifices additional permitted landfill capacity resulting in the landfill closing sooner than permitted capacity dictates • Siting and developing facilities is a 5- to 10-year minimum, if feasible (note NEW facilities infrequently sited in California in last 30 years) • CEQA needed for Compost and C&D • Lose at least partial control of disposal rates disposal • Puts partial burden on jurisdictions to achieve mandates and their own solid waste management plans. Must provide their own system, provide staffing to complete all activities, and hire their own contractors.
No Project 2 – Long Term MRF/Transfer/No Organics or C&D Phased closing of WPWMA Facility (Except for MRF/Transfer) CEQA likely required for Transfer	No change for **One Big Bin** **Organics** managed by jurisdictions **C&D** managed by jurisdictions **Self Haul** accepted for MSW; continue using existing area, may do small upgrades, no major changes	**MRF** becomes **MRF/Transfer**; upgrades for transfer required Each jurisdiction will need to **contract for organics and C&D processing** **C&D and organics** operations must be removed from facility for availability of permitted landfill space	WRS **Landfill** closes when existing capacity is filled After closed, long-haul **MSW** to other existing facility under contract[a]	• Removing organics and C&D operations and infrastructure allows for use of permitted disposal capacity • Siting and developing facilities is a 5- to 10-year minimum, if feasible (note NEW facilities infrequently sited in California in last 30 years) • Lose control of rates for organics and C&D and ultimately disposal • Puts partial burden on jurisdictions to achieve mandates and their own solid waste management plans. Must provide their own system, provide staffing to complete all activities, and hire their own contractors.
No Project 3a – Entire Site Closure and Waste Removal Services not provided by WPWMA. Site is closed to operations, landfill removed (clean closed), and site restored to "original" condition CEQA needed for landfill clean closure and possibly for actions implemented by each jurisdiction.	Each jurisdiction contracts on their own; multiple contracts Changes in collection methods for **MSW/recycling/organics/C&D** depending what facility they go to (i.e. move to 3 bins, private facilities) **Self Haul** facility closed at this site, must be addressed by jurisdictions.	Each jurisdiction will need to either **site their own processing and transfer facility(ies) or contract for facilities/service** Demolish MRF and other infrastructure at the facility	Cease disposal in the landfill immediately. Clean close landfill (excavate and remove waste, fill hole) Each jurisdiction will need to either site their own disposal facility or contract for facilities/service for **MSW**	• Clean closure is a major endeavor (both time and money) • Siting and developing facilities is a 5- to 10-year minimum, if feasible (note NEW facilities infrequently sited in California in last 30 years) • Existing contracts would need to execute buy-out periods or be revised • Lose control of rates and enter a re-contracting period every 5 to 10 years; private company prices will be higher; no longer have local control over system • Economic impact by exporting jobs out of region • Model flagship facility goes away • Puts full burden on jurisdictions to achieve mandates and their own solid waste management plans. Must provide their own system, provide staffing to complete all activities, and hire their own contractors.
No Project 3b – Entire Site Closure, no Waste Removal Services not provided by WPWMA. Site is closed to operations, facilities removed, landfill closed but not removed CEQA possibly needed for actions implemented by each jurisdiction.	See #3a above	See #3a above	Cease disposal in the landfill as soon as reasonable final grades are reached Each jurisdiction will need to either site their own disposal facility or contract for facilities/service for **MSW**	• Siting and developing facilities is a 5- to 10-year minimum, if feasible (note NEW facilities infrequently sited in California in last 30 years) • Existing contracts would need to execute buy-out periods or be revised • Lose control of rates and enter a re-contracting period every 5 to 10 years; private company prices will be higher; no longer have local control over system • Economic impact by exporting jobs to out of region • Model flagship facility goes away • Puts full burden on jurisdictions to achieve mandates and their own solid waste management plans. Must provide their own system, provide staffing to complete all activities, and hire their own contractors.

Note:

[a] Initial discussions of a new disposal location following the closure of WRS Landfill did not rule out a new in-county facility. However, upon further review of available areas from previous siting efforts, the team was not able to identify suitable in-county locations.

Attachment 2
Alternate Disposal Sites

Landfill Name	Address	Facility Hours	Facility Owner (Public or Private)	Contact Information	Tipping Fees (per ton)	One Way Distance from WRSL (miles)[a]	Round Trip Distance from WRSL (miles)	Current Permitted Disposal Acreage	Available Capacity (CY)/Date of Basis	Date of Last Permit Issued	Daily Permitted Max (tons)	Waste Received Daily[g] (tons)	Waste Received Annually/Date of Basis[g] (tons)	Estimated Closure Date	Receives Waste by Rail (Y/N)	Notes
Recology Ostrom Road LF Inc.	5900 Ostrom Road, Wheatland, CA 95692	Monday - Friday: 6AM - 3:30PM	Private	Christine Maguire (707) 235-2586	$65[b]	21.5	43	225	39,223,000 (2007)	2002	3,000	490	179,000 (2015-16)	2066	Y*	*May receive waste by rail. Joint Technical Document (JTD) describes a proposed railroad spur.
Sacramento County Landfill (Kiefer)	12701 Kiefer Blvd, Sloughhouse, CA 95683	Monday - Friday: 6:30AM - 4:30PM Saturday and Sunday: 8:30AM - 4:30PM	Public	(916) 875-4557	$30	30.8	61.6	660	112,900,000 (2005)	1999	10,815	2,200	688,203 (2016)	2064	N	
Yolo County Central Landfill	44090 County Road 28H, Woodland CA 95776	Monday - Saturday: 6:30AM - 4PM Sundays: 8AM - 4PM	Public	(530) 666-8856	$54[c]	39.1	78.2	473	35,171,142 (2017)	2008	1,800	~600	176,963 (2014-15)	2081	N	
Recology Hay Road	6426 Hay Road, Vacaville, CA 95687	Open Daily: 8AM - 4PM	Private	(707) 678-4718	$60	57.9	115.8	256	30,433,000 (2010)	2013	2,400		615,326 (2016)	2050	N	
Potrero Hills Landfill	3675 Potrero Hills Lane, Suisun City, CA 94585	Monday - Friday: 8:30AM - 3:30PM Saturday: 9AM - 3:30PM	Private	(707) 432-4627	$75	73.4	146.8	340	13,872,000 (2006)	2012	4,330	2434[f]	701,030[f] (2017)	2048	N	
Forward Landfill	9999 S. Austin Road, Manteca, CA 95336	Monday - Friday: 8AM - 5PM Saturday: 8AM - 12PM	Private	Mark (209) 456-2696		80.5	161	354.5	22,100,000 (2012)	2012	8,668		923,311 (2016)	2020	Y*	May accept waste by rail. The facility is 3.2 miles away from a railyard.
Anderson Landfill	18703 Cambridge Road, Anderson, CA 96007	Monday - Friday: 7AM - 3:30PM	Private	(530) 347-5236	$47.60[d]	137	274	130	11,914,025 (2008)	2008	1,850		91,599 (2016)	2055	N	
Altamont Landfill	10840 Altamont Pass Road, Livermore, CA 94551	Monday - Friday: 6AM - 4PM	Private	Dave Huffman (925) 421-5164	$65[e]	108	216	472	65,400,000 (2014)	2005	11,150		841,804 (2016)	2025	N	
Lockwood Regional Landfill	2700 East Mustang Road, Sparks, NV 89434	Monday - Saturday: 8AM - 4:30PM	Private	Fallon Honeycut (775) 326-2308	$19.30	132	264	856.5	42,850,240 (2009)	2013		5,000	1,071,537 (2009)	2032	Y	
East Carbon Landfill (ECDC)	1111 W Highway 123, East Carbon, UT 84520	Monday - Friday: 8AM - 5PM Saturday: 8AM - 12PM	Private	(949) 673-1247		776	1552		300,000,000						Y	

[a] Miles calculated using Google Maps.

[b] This is an estimate - fees will vary depending on the volume of the load and the time of day the material is being hauled.

[c] Minimum fee of $14.

[d] Plus an environmental fee starting at $16 - it varies per load depending on what is being disposed.

[e] This is an estimate - fees may vary depending on total waste volume and haul frequency.

[f] According to the JTD, these numbers are projected refuse tonnages based on an assumed waste inflow to increase by 2% annually until 3,400 ton/day is met.

[g] Information found in facilities JTDs, individual websites, or CalRecycle.

Appendix 2B
Waste Stream Projections

TECHNICAL MEMORANDUM

Date:	Sept. 27, 2017	**Project No.:**	1649494
To:	Janet Goodrich,	**Company:**	CH2M
From:	Will Dickinson		
cc:	Rich Haughey		
RE:	**WPWMA WASTE STREAM PROJECTIONS**		

Golder Associates has prepared this Technical Memo (TM) pursuant to Task 3.3 of the Scope of Services authorized by CH2M Agreement No. 10381-7-116920, which requires a TM under the heading of Waste Stream Projections.

1.0 PURPOSE

The purpose of preparing these waste stream projections is to assist the consulting team in calculating current and future facility requirements, as the type and quantity of materials handled at the site is a basic design parameter. This information is also important for analyzing environmental impacts and establishing permit limits for concerns such as traffic and throughput tonnage.

2.0 METHODOLOGY

The Scope of Services for this subtask was described as: "Consultant shall develop estimates of annual waste tonnages received and processed at the WPWMA's facility by major material classification (e.g. municipal solid waste, construction and demolition debris, green waste, wood waste, inert materials, etc.) and by delivery method (i.e.: commercial and larger haulers versus self-haul) over the next fifty (50) years following a methodology developed by Consultant in agreement with WPWMA. Consultant shall utilize WPWMA's historical material receipt data as well as current and historical population rates or other appropriate demographic data, SACOG or other regional growth estimates, current development plans for each of the municipalities in the WPWMA's service area and best estimates of changes in the waste stream due to changes in applicable laws and regulations."

Golder's approach to developing the waste stream projections is described in Section 2.1.

During the period between scoping this project and receiving notification to proceed, the Governor signed Senate Bill 1383 (SB 1383), the short-lived climate pollutants bill, which dramatically changed the outlook for waste management in California. As a result, Golder requested and received authorization to revise the waste stream projections to take SB 1383 into consideration. SB 1383 and the revision process are described in Section 2.2.

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2.1 Initial Waste Stream Projections

Golder performed the following tasks to develop the first set of waste stream projections, which do not take into account the anticipated impact of SB 1383:

1. Obtained available recorded tonnage and yardage information by major material classification (as defined by tipping fee categories) from WPWMA staff. Recorded quantity information for the material classification "MSW" started in 1997, while quantities for other classifications (e.g. Green Waste) were not recorded until later years, resulting in shorter periods of time to establish trends.
2. The annual data was entered into a custom-designed Excel spreadsheet.
3. Searched for government data relating to indicators that may influence the quantities of materials accepted. Several indicators were identified, including: Population, Total Employment, New Homes Permitted, Households and Taxable Retail Sales. Where different government agencies had inconsistent actual or projected data, we chose the source that appeared most credible, as follows:
    a. Total Employment, New Homes Permitted, Households: "California County-Level Economic Forecast 2015 – 2040", produced for the California Department of Transportation by The California Economic Forecast.
    b. Population, historical: California Department of Finance "E-4 Population Estimates for California State and Counties", January 1, 1981 to January 1, 1990, and 2011-2016. For projections: Department Of Finance P-2 "Total Population Projections for California and Counties: July 1, 2015 to 2060 in 5-year Increments".
    c. Taxable Retail Sales: State of California Board of Equalization.
4. Where necessary, Golder extrapolated data out to the year 2060. Note: 2060 was chosen because it is the longest period for which any government projections exist – i.e. the California Department of Finance's estimates for Population. All other data sets required some degree of extrapolation from agency projections. Extrapolations were performed as follows:
    a. Total Employment from 2041 to 2060 was based on a 0.07% increase over the previous year.
    b. New Homes Permitted were assumed to remain constant at 1,861 from 2041 to 2060.
    c. Taxable Retail Sales from 2041 to 2060 was based on a 3.0% increase over the previous year.
5. Created charts comparing data for the quantities (tons and/or yards) of each waste classification accepted by WPWMA through 2016 versus the indicators Population, Taxable Retail Sales, New Home Permits, and Total Employment for those years. These indicators were selected as most relevant to predicting the generation of solid waste accepted by WPWMA. The charts developed for analyzing Municipal Solid Waste (MSW) are included as Exhibit A.
6. Compared trend lines for each of the twelve classifications of waste to determine a best fit for the data.
7. Identified past and future influences on quantities of waste accepted, as shown in Table 1. In consideration of these influences and the trend lines identified, chose appropriate combinations of indicators to project future waste acceptance through 2060 (Exhibit B).
8. To check the accuracy of the MSW Accepted projections, used 1997 as the starting point and applied the methodology used for projecting the years 2017-2060. The correlation between projected and actual tons and yards through 2016 was very good.
9. Developed the following formula to predict waste disposed at the landfill through 2060 based on projections of waste accepted: Waste Disposed = MSW Tons*0.7 + MSW Yards*0.8/8 + C&D Tons*0.5 + C&D Yards*0.5/6 + Sludge and Mixed Inerts + Commercial Food Waste.

Table 1 - Influences on Material Quantities Accepted

Material[1]	Past Influences	Future Influences	Indicator Used
MSW tons	Population growth and employment.	Same, plus: agency participation in WPWMA (flow control); packaging changes; future SS recycling programs (e.g. food); consumer habits; changes in regulations.	50% Population 50% Employment
MSW yards	Population growth and employment.	Same, plus: packaging changes; pricing at WPWMA vs. competing waste facilities.	50% Population 50% Employment
C&D tons	Retail sales and employment show best trend lines, although these may not be indicative over long term. New permits and population logically also important. Competition from other waste facilities has skewed trend lines.	Same, plus: agency participation in WPWMA (flow control); construction practice changes; future SS recycling programs; pricing at WPWMA vs. competing waste facilities; changes in regulations.	50% Employment 25% Retail Sales 25% New Home Permits
C&D yards	Population and Employment show best trend lines.	Same, plus: construction practice changes; pricing at WPWMA vs. competing waste facilities; changes in regulations.	50% Population 50% Employment
Green Waste tons	Historical record not indicative due to ramp up of SS programs during early years and fall off more recently due to drought conditions.	Continuing reductions in plantings due to drought conditions; changes in regulations; increase in generation due to maturing trees and shrubs.	75% Population 25% Employment
Green Waste yards	Population, Taxable Retail Sales and Employment fit trend lines.	Same, plus: Continuing reductions in plantings due to drought conditions; changes in regulations (AB 1826[2]); increase in generation due to maturing trees and shrubs; pricing at WPWMA vs. competing waste facilities.	75% Population 25% Employment
Wood Waste tons	Employment showed best fit, although trend for wood is down rather than up. New Home Permits trended down, but more steeply. Strongest influence may be hauling companies that have a choice of taking debris boxes to other waste facilities.	Same, plus: agency participation in WPWMA (flow control); construction practice changes; future SS recycling programs; pricing/capacity at WPWMA vs. competing waste facilities; changes in regulations.	70% Employment 30% New Home Permits
Wood Waste yards	Employment showed best fit, although trend for wood is down rather than up. New Home Permits trended down,	Same, plus: construction practice changes; changes in regulations; availability and cost of alternative waste facilities.	70% Employment 30% New Home Permits

[1] "Material" is as defined by tipping fee categories established by WPWMA. Material charged by the ton is typically delivered by large commercial haulers, while material charged by the yard is typically delivered in pickup trucks or small trailer and is directed to the Public Tipping Area.
[2] Assembly Bill 1826, Mandatory Commercial Organics Recycling

	but more steeply. Strongest influence may be pricing at WPWMA vs. other waste facilities.		
Sludge & Mixed Inerts tons	New Home Permits showed closest fit, although New Home Permits showed more serious downward trend. Since 2008, Population, Retail Sales and Employment showed good correlation.	Same, plus: addition of digester at Pleasant Grove plant could significantly decrease sludge production and allow marketing to Synagrow rather than disposal; changes in regulations governing sludge land application could increase disposal.	50% Population 50% Employment
SS Inerts tons	Population shows best fit, with downside adjustment likely influenced by New Home Permits.	Same, plus: pricing at WPWMA vs. competing waste facilities; changes in regulations; major construction projects either using fill or generating fill.	75% Population 25% New Home Permits
SS Inerts yards	Employment, followed by Population.	Same, plus: pricing at WPWMA vs. competing waste facilities; changes in regulations.	25% Population, 50% Employment 25% New Home Permits
Comm. Food Waste tons	Choices made by haulers (primarily Roseville) re which loads to segregate for landfill disposal vs. commingle with commercial MSW.	AB 1826 compliance programs will likely decrease this category significantly, and perhaps eliminate it altogether if reduced food content in generator loads allows remainder to be sent as MSW.	Eliminate category in 2019 and move that material to MSW

Golder also reviewed the websites of local planning departments to determine if the supply of residential and commercially zoned land would keep up with demand as represented by the Department of Finance population estimates This does appear to be the case, as the City of Roseville, City of Lincoln and the County of Placer are each planning for significant growth within their jurisdictions.

For example, the 2016 City of Roseville General Plan Update shows the potential for population growth of 65,000 to buildout, which they project will occur sometime after the year 2035. This estimate includes three relatively new specific plan areas - Sierra Vista, Creekview and Amoruso Ranch – as well as other areas in various stages of buildout. It is likely that Roseville will continue to grow and annex beyond their current identified boundaries, thus accommodating more growth and extending the time within which complete buildout would occur.

The County of Placer has also indicated their interest in continued growth through various actions, including planning related to the Placer Vineyards, Riolo Ranch, Placer Ranch, Regional University, Curry Creek, Sunset Area Plan and Bickford Ranch project areas.

Although Rocklin has been an engine for growth in the waste shed, it appears this will taper off in the next ten to twenty years. The 2011 General Plan Update for Rocklin estimates a residential buildout date of the year 2028 using a mid-range growth rate and a population of 76,136 (an approximate increase of 11,000 from 2017). This early buildout date is not unexpected due to the current city limit constraints and the high degree of existing concentrated development.

The City of Lincoln has much more potential for growth due to the lightly populated agricultural lands surrounding the existing city limits. Various Lincoln City Councils have demonstrated their support for continued growth through General Plan amendments and infrastructure planning.

In summary, it is unlikely that the supply of housing will be a constraint on population growth and utilization of WPWMA services for the foreseeable future; rather, demand (including ability to pay) for new housing will be the limiting factor. The creation of new jobs in the region will be the major driver of demand. Secondary influences could include new university students and Bay Area transplants seeking lower housing costs.

2.2 Revisions Necessary Due to SB 1383

SB 1383 established targets to achieve a 50 percent reduction in disposed organic waste by 2020 and a 75 percent reduction by 2025, as compared to 2014 disposed levels. In conjunction with the overall reduction in disposed organic waste, SB 1383 requires a 20 percent reduction in edible food sent to landfills. Because the WPWMA "MSW", "Green Waste", "Sludge", "Commercial Food Waste", "Wood Waste" and "C&D" material categories all contain organic materials, waste accepted and materials diverted from each of these classifications must be reviewed based on the requirements of SB 1383. This additional task required development of assumptions regarding what programs WPWMA and its Member Agencies might adopt to comply with SB 1383.

The following tasks were performed to revise the waste stream projections:

1. Applied CalRecycle statewide waste disposal composition factors[3] to 2014 WPWMA waste disposed quantities to estimate 2014 organic material disposal tonnage (see Exhibit C). Separately determined sewage sludge tons disposed as that material category is not included in the CalRecycle study.
2. Determined and calculated a 2025 organic disposal target for WPWMA at 75% of the 2014 rate.
3. Applied CalRecycle 2014 waste disposal composition factors to projected 2025 WPWMA waste disposal tonnage to determine what disposal level would be expected without new programs for organics.
4. Based on site knowledge and discussions with WPWMA staff, assumed percentage reduction factors on specific waste types for SB1383 compliance programs to arrive at an assumed disposal tonnage. The outcome was a 62% reduction from 2014 levels rather than the statewide goal of 75%.
5. Reduced "accepted" and "disposed" tonnages for relevant material types in year 2025 as appropriate (shown in detail in Exhibit C and summarized in Exhibit D). Source separation programs implemented by the Participating Agencies would reduce material acceptance (and therefore disposal) while separation taking place at the MRF only impacts disposal amounts.
6. Revised projections for years 2021-2024 and 2026-2060 based on the 2025 projections.

3.0 RESULTS

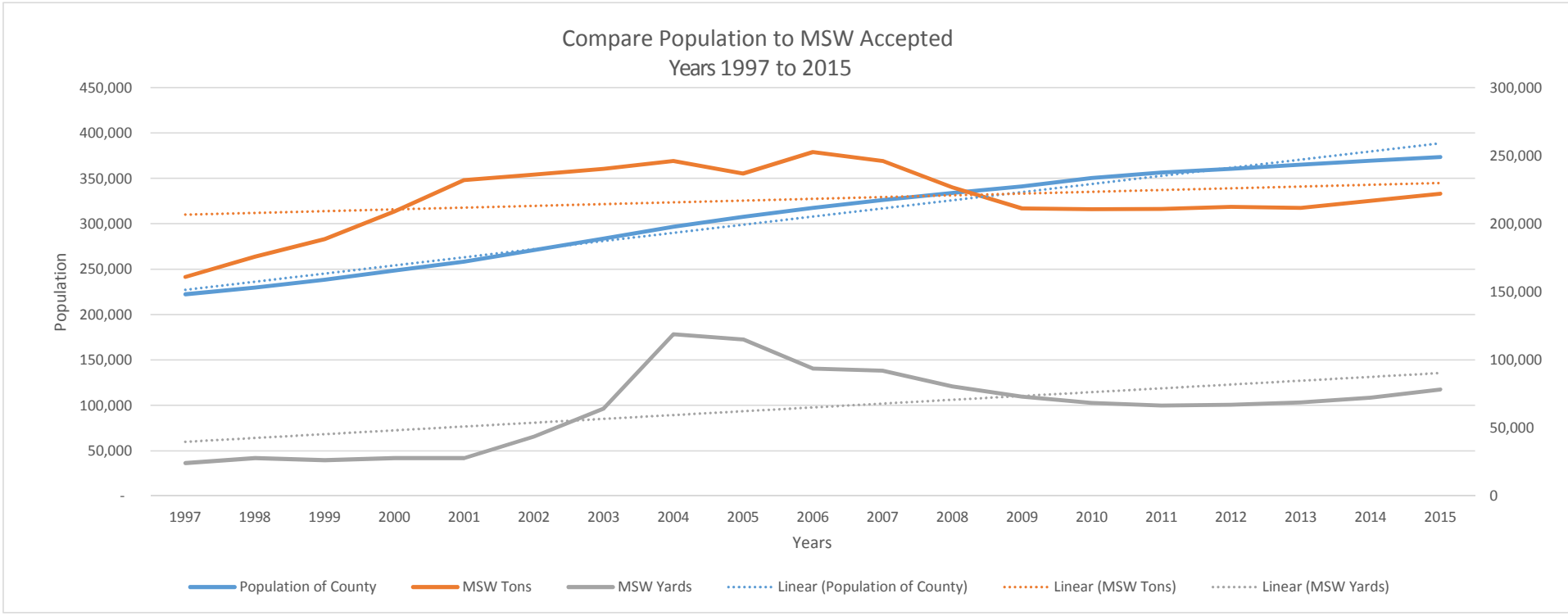
Exhibit E shows the resulting projection of materials accepted and disposed after the adjustment for assumed SB 1383 program implementation. Projections are shown on an annual basis through the year 2025 and every five years from 2025 to 2060.

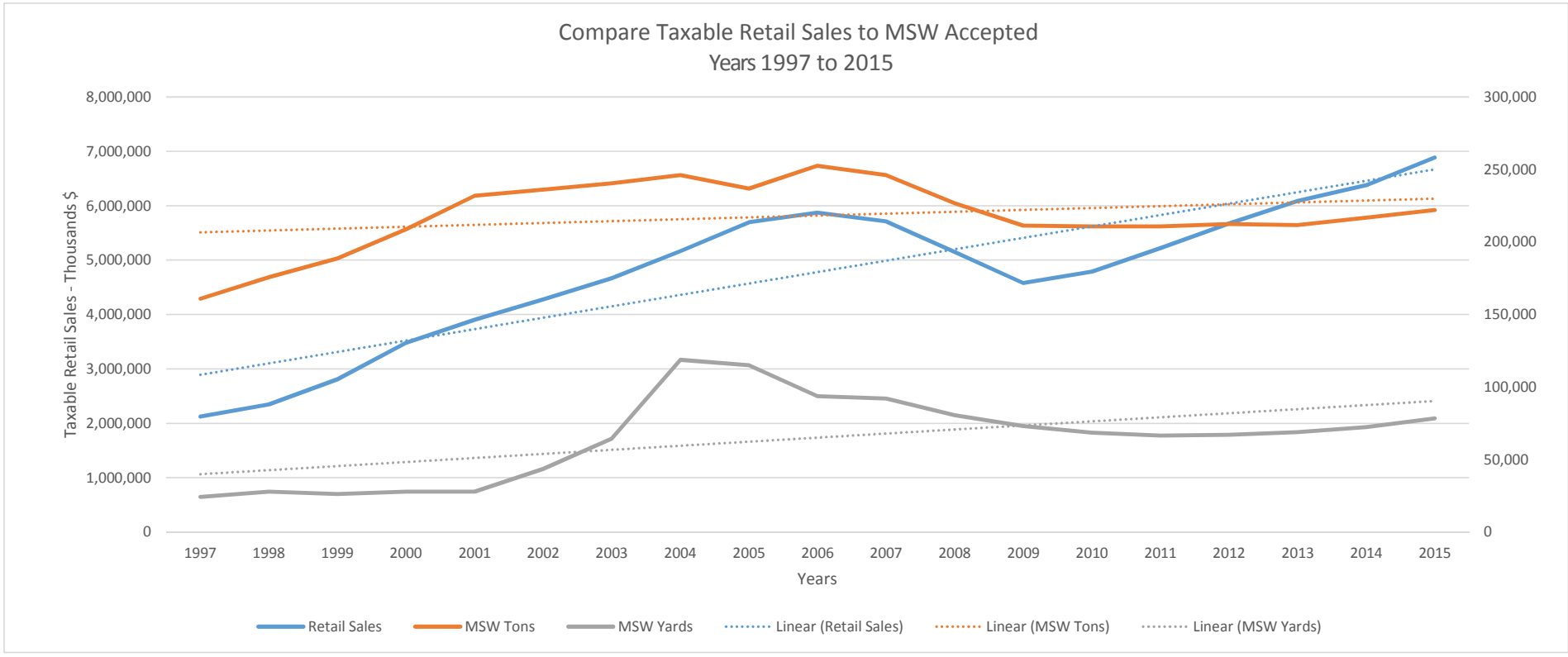
Exhibits: A-E

[3] "2014 Disposal-Facility-Based Characterization of Solid Waste in California", October 6, 2015, produced by Cascadia Consulting Group under contract to CalRecycle.

Exhibit A

MSW Series




Compare Taxable Retail Sales to MSW Accepted
Years 1997 to 2015
Taxable Retail Sales - Thousands $
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
300,000
250,000
200,000
150,000
100,000
50,000
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
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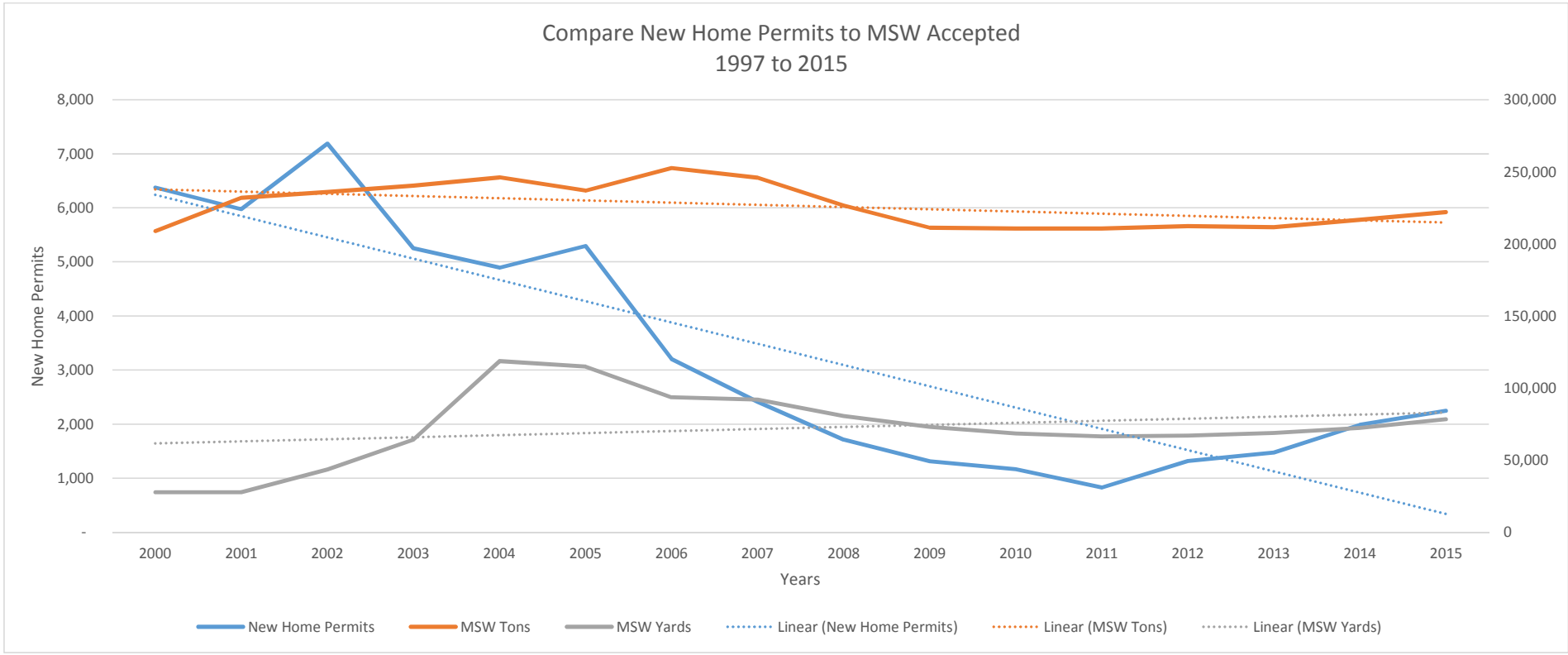
Linear (Retail Sales)
Linear (MSW Tons)
Linear (MSW Yards)


Compare New Home Permits to MSW Accepted
1997 to 2015
New Home Permits
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
-
300,000
250,000
200,000
150,000
100,000
50,000
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Years
New Home Permits
MSW Tons
MSW Yards
Linear (New Home Permits)
Linear (MSW Tons)
Linear (MSW Yards)

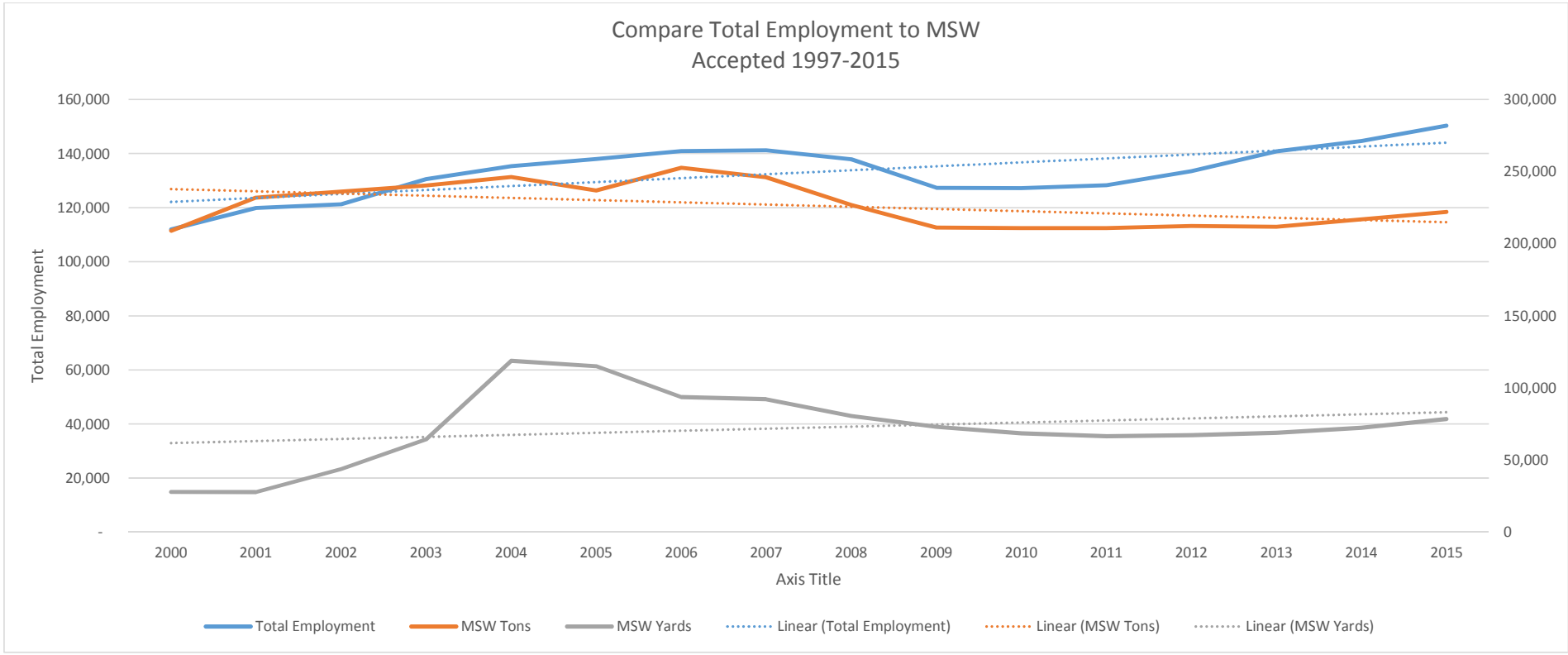

Compare Total Employment to MSW
Accepted 1997-2015
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
-
300,000
250,000
200,000
150,000
100,000
50,000
0
Total Employment
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
Axis Title
Total Employment
MSW Tons
MSW Yards
Linear (Total Employment)
Linear (MSW Tons)
Linear (MSW Yards)

Exhibit B

WPWMA Waste Stream Projections
Not Adjusted for SB 1383

								Projections														
Material Type Accepted	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
Municipal Solid Waste																							
MSW tons	210,742	210,781	212,368	211,700	216,822	222,028	223,385	227,745	231,959	245,525	248,884	251,773	254,581	257,440	260,685	263,564	278,869	295,961	312,582	327,068	341,299	355,217	369,589
MSW yards	68,511	66,490	67,142	68,885	72,375	78,390	78,869	80,408	81,896	83,344	84,484	85,465	86,418	87,389	88,490	89,468	94,663	100,465	106,107	111,024	115,855	120,579	125,458
Construction/Demolition																							
C&D tons	43,623	38,667	36,650	46,026	50,393	59,237	61,551	63,743	66,108	66,985	66,916	67,105	67,221	67,627	68,666	69,593	74,056	79,389	83,899	88,616	93,598	98,861	104,419
C&D yards	20,416	25,037	24,733	31,604	33,847	37,250	38,705	39,460	40,190	40,901	41,460	41,942	42,409	42,886	43,426	43,906	46,455	49,303	52,071	54,485	56,855	59,174	61,568
Sludge & Mixed Inerts - tons	17,952	19,265	21,581	23,459	24,108	25,196	25,828	26,332	26,820	27,294	27,667	27,988	28,301	28,618	28,979	29,299	31,000	32,900	34,748	36,358	37,940	39,488	41,085
Green Waste																							
GW tons	47,904	45,949	48,166	46,076	43,888	40,414	40,661	45,294	45,988	46,677	47,281	47,843	48,399	48,968	49,577	50,155	53,197	56,644	60,113	63,227	66,233	69,110	72,078
GW yards	36,263	38,923	40,372	37,121	31,694	31,701	31,895	32,392	32,888	33,380	33,813	34,214	34,612	35,019	35,454	35,868	38,043	40,508	42,990	45,216	47,366	49,423	51,546
Wood Waste																							
Wood tons	1,383	1,167	1,201	1,228	1,324	1,500	1,515	1,556	1,602	1,607	1,580	1,566	1,551	1,545	1,556	1,562	1,605	1,651	1,682	1,724	1,766	1,810	1,855
Wood yards	3,976	4,028	4,187	4,970	4,191	4,789	4,976	5,110	5,263	5,276	5,188	5,143	5,095	5,075	5,112	5,129	5,271	5,422	5,524	5,661	5,801	5,945	6,092
Food Waste - Tons	14,523	13,550	12,388	12,017	12,100	11,747	9,465	9,465	9,465														
SS Inert Materials																							
SS Inert tons	15,743	18,411	12,233	15,431	16,866	17,504	17,504	17,770	18,116	18,077	17,830	17,751	17,668	17,668	17,802	17,916	18,623	19,426	20,171	21,033	21,843	22,594	23,361
SS Inert yards	6,497	6,770	7,676	9,577	8,550	12,270	12,270	12,553	12,878	12,920	12,762	12,698	12,627	12,614	12,714	12,780	13,219	13,698	14,087	14,536	14,979	15,416	15,863
Appliance - each	9,599	8,147	6,295	6,332	6,411	8,067	8,556	8,656	8,761	8,868	8,976	9,085	9,195	9,308	9,422	9,538	10,141	10,834	11,553	12,215	12,845	13,437	14,047
Water Treat Sludge - tons	1,111	1,039	1,407	1,546	1,327	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160
total accepted tons							408,329	420,870	429,581	436,071	440,261	444,343	448,242	452,629	458,365	463,478	490,330	520,722	549,635	576,009	602,174	628,050	654,880
Disposed Tonnage																							
Residue	164,395	160,649	161,800	173,951	180,187	197,201																	
Direct	43,789	40,602	40,642	42,049	41,713	41,050																	
total disposed tons	208,185	201,251	202,442	216,000	221,900	238,251	233,550	238,419	243,248	244,396	247,248	249,824	252,294	254,953	258,260	261,196	276,575	293,923	310,455	325,257	339,972	354,559	369,683

Note - Where conversion from cubic yards to tons was necessary (e.g. for determining "Total Accepted Tons"), the following conversion factors were used: MSW yards/8 = MSW Tons; C&D Yards/6 = C&D Tons; Green Waste Yards/8 = Green Waste Tons; Wood Waste Yards/6 = Wood Waste Tons; Inert Yards/2 = Inert Tons.

Exhibit C

Assumed Approach to WPWMA Compliance with SB 1383

Organic Material included in disposed waste: 2014	Disposed Organics																						2025 Target Organic Disposal (75%)
	Sewage Sludge		Paper		Food		Leaves and Grass		Prunings/Trimmings		Branches and Stumps		Manures		Textiles		Carpet		Remainder		Lumber		Total Organic		
	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	tons
disposed organic material: tpy and as % of disposed waste stream[1]	10.9%	24,108	17.4%	34,416	18.1%	35,800	3.8%	7,516	3.1%	6,132	1.7%	3,362	0.6%	1,187	4.0%	7,912	1.8%	3,560	4.3%	8,505	11.9%	23,537	70%	156,036	39,009

Organic Material included in disposed waste: 2025, pre-SB1383	Disposed Organics																					
	Sewage Sludge		Paper		Food		Leaves and Grass		Prunings/Trimmings		Branches and Stumps		Manures		Textiles		Carpet		Remainder		Lumber		Total Organic	
	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons
disposed organic material: tpy and as % of disposed waste stream[1]	13.2%	29,299	17.4%	40,350	18.1%	41,973	3.8%	8,812	3.1%	7,189	1.7%	3,942	0.6%	1,391	4.0%	9,276	1.8%	4,174	4.3%	9,972	11.9%	27,596	70%	183,974

Organic Material included in disposed waste: 2025, post-SB1383	Disposed Organics																					
	Sewage Sludge		Paper		Food		Leaves and Grass		Prunings/Trimmings		Branches and Stumps		Manures		Textiles		Carpet		Remainder		Lumber		Total Organic	
	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons	percent	tons
reduction target (compared to 2025 projected): tpy and % reduction	90%	26,369	60%	24,210	60%	25,184	50%	4,406	50%	3,594	50%	1,971	0%	-	75%	6,957	75%	3,131	75%	7,479	75%	20,697		123,998
material diverted pre-WPWMA:tpy		26,369		-		3,100		-		-		-		-		-		-		-		-		29,469
material handled on site: tpy		2,930		40,350		38,873		8,812		7,189		3,942		1,391		9,276		4,174		9,972		27,596		154,505
material diverted on-site: tpy		-		24,210		22,084		4,406		3,594		1,971		-		6,957		3,131		7,479		20,697		94,529
disposed organic material: tpy		2,930		16,140		16,789		4,406		3,594		1,971		1,391		2,319		1,044		2,493		6,899	44%	59,977

Notes: 1) sludge has been subtracted from the disposed waste stream to calculate all non-sludge organic components.

2) a 75% reduction in organics disposed was not assumed for WPWMA waste; rather, it has been assumed that a 62% reduction is a more realistic contribution to the State-side effort.

Exhibit D

Western Placer Waste Management Authority
Impact of SB 1383 Program Implementation

	Waste Accepted - Tons Per Year				
Material Type	**2014**	**2025 Pre-SB1383**	**2025 Adjusted for SB1383 Compliance**	**Change in 2025 Waste Accepted due to SB1383**	**Change in 2025 Waste Disposed due to SB1383**
Municipal Solid Waste					
MSW tons	216,822	263,564	240,589	-22,976	
MSW yards	72,375	89,468	89,468	0	
Construction/Demolition					
C&D tons	50,393	69,593	69,593	0	
C&D yards	33,847	43,906	43,906	0	
Sludge & Mixed Inerts - tons	24,108	29,299	2,930	-26,369	
Green Waste					
GW tons	43,888	50,155	70,031	19,876	
GW yards	31,694	35,868	35,868	0	
Wood Waste					
Wood tons	1,324	1,562	1,562	0	
Wood yards	4,191	5,129	5,129	0	
Food Waste - Tons	12,100	0	0	0	
SS Inert Materials					
SS Inert tons	16,866	17,916	17,916	0	
SS Inert yards	8,550	12,780	12,780	0	
Appliance - each	6,411	9,538	9,538	0	
Source separated food waste	0	0	3,100	3,100	
Water Treat Sludge - tons	1,327	1,160	1,160	0	
Disposed Tonnage	*221,900*	*261,196*	*137,198*	*-26,369*	*-123,998*

Exhibit E

WPWMA Waste Stream Projections

Adjusted for SB 1383

								Projections													
Material Type Accepted	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**	**2055**	**2060**
Municipal Solid Waste																							
MSW tons	210,742	210,781	212,368	211,700	216,822	222,028	223,385	227,745	231,959	242,387	245,703	244,680	243,662	242,647	241,637	240,589	254,560	270,161	285,333	298,557	311,547	324,252	337,371
MSW yards	68,511	66,490	67,142	68,885	72,375	78,390	78,869	80,408	81,896	83,344	84,484	85,465	86,418	87,389	88,490	89,468	94,663	100,465	106,107	111,024	115,855	120,579	125,458
Construction/Demolition																							
C&D tons	43,623	38,667	36,650	46,026	50,393	59,237	61,551	63,743	66,108	66,985	66,916	67,105	67,221	67,627	68,666	69,593	74,056	79,389	83,899	88,616	93,598	98,861	104,419
C&D yards	20,416	25,037	24,733	31,604	33,847	37,250	38,705	39,460	40,190	40,901	41,460	41,942	42,409	42,886	43,426	43,906	46,455	49,303	52,071	54,485	56,855	59,174	61,568
Sludge & Mixed Inerts - tons	17,952	19,265	21,581	23,459	24,108	25,196	25,828	26,332	26,820	27,294	27,667	20,750	15,563	11,672	8,754	2,930	3,100	3,290	3,475	3,636	3,794	3,949	4,109
Green Waste																							
GW tons	47,904	45,949	48,166	46,076	43,888	40,414	40,661	45,294	45,988	46,677	47,281	51,670	56,453	61,685	67,449	70,031	74,278	79,090	83,935	88,283	92,480	96,496	100,641
GW yards	36,263	38,923	40,372	37,121	31,694	31,701	31,895	32,392	32,888	33,380	33,813	34,214	34,612	35,019	35,454	35,868	38,043	40,508	42,990	45,216	47,366	49,423	51,546
Wood Waste																							
Wood tons	1,383	1,167	1,201	1,228	1,324	1,500	1,515	1,556	1,602	1,607	1,580	1,566	1,551	1,545	1,556	1,562	1,605	1,651	1,682	1,724	1,766	1,810	1,855
Wood yards	3,976	4,028	4,187	4,970	4,191	4,789	4,976	5,110	5,263	5,276	5,188	5,143	5,095	5,075	5,112	5,129	5,271	5,422	5,524	5,661	5,801	5,945	6,092
Food Waste - Tons	14,523	13,550	12,388	12,017	12,100	11,747	9,465	9,465	6,000							0							
SS Inert Materials																							
SS Inert tons	15,743	18,411	12,233	15,431	16,866	17,504	17,504	17,770	18,116	18,077	17,830	17,751	17,668	17,668	17,802	17,916	18,623	19,426	20,171	21,033	21,843	22,594	23,361
SS Inert yards	6,497	6,770	7,676	9,577	8,550	12,270	12,270	12,553	12,878	12,920	12,762	12,698	12,627	12,614	12,714	12,780	13,219	13,698	14,087	14,536	14,979	15,416	15,863
Appliance - each	9,599	8,147	6,295	6,332	6,411	8,067	8,556	8,656	8,761	8,868	8,976	9,085	9,195	9,308	9,422	9,538	10,141	10,834	11,553	12,215	12,845	13,437	14,047
Source Separated Food Waste - tons									3,100	3,138	3,176	3,215	3,254	3,294	3,334	3,375	3,589	3,834	4,088	4,322	4,545	4,755	4,971
Water Treat Sludge - tons	1,111	1,039	1,407	1,546	1,327	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160	1,160
total accepted tons							408,329	420,870	429,216	436,071	440,257	437,054	435,892	436,901	440,298	437,384	462,790	491,592	519,023	544,153	569,068	593,688	619,219
Disposed Tons	208,185	201,251	202,442	216,000	221,900	238,251	233,550	238,419	239,784	242,200	245,021	193,509	163,568	147,380	144,619	137,198	147,110	156,443	165,250	173,240	181,228	189,196	197,475

Note - Where conversion from cubic yards to tons was necessary (e.g. for determining "Total Accepted Tons"), the following conversion factors were used: MSW yards/8 = MSW Tons; C&D Yards/6 = C&D Tons; Green Waste Yards/8 = Green Waste Tons; Wood Waste Yards/6 = Wood Waste Tons; Inert Yards/2 = Inert Tons.

Appendix 2C
Aquatic Resources Report

REPORT

Aquatic Resources Delineation Report for the Western Placer Waste Management Authority Master Planning Project, Placer County, California

Prepared for

Western Placer Waste Management Authority

March 2018

ch2m

Executive Summary

This aquatic resources delineation report presents the findings of the waters of the United States (U.S.) delineation for the Western Placer Waste Management Authority (WPWMA) Master Planning Project in Placer County, California. WPWMA proposes to expand existing operations at the Western Regional Sanitary Landfill and Materials Recovery Facility near Roseville, California. The delineation methodology followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

Across all areas surveyed, 170 seasonal wetlands (totaling 8.51 acres), 13 swales (totaling 11.29 acres), 2 irrigation ponds (totaling 2.45 acres), 2 irrigated wetlands (totaling 1.04 acres), and 1 excavated drainage (totaling 0.02 acre) were delineated. The eastern property included the greatest number and acreage of wetland and aquatic features, followed by the northwest and southwest properties, and the south triangle, respectively.

The delineation results and conclusions presented in this report are considered preliminary, pending verification by the U.S. Army Corps of Engineers Regulatory Branch.

Contents

Figures

Acronyms and Abbreviations

°F	degree(s) Fahrenheit
CDFW	California Department of Fish and Wildlife
CRPR	California Rare Plant Rank
CWA	Clean Water Act
EPA	U.S. Environmental Protection Agency
FAC	Facutative
FACU	Facultative upland
FACW	Facultative wet
FEMA	Federal Emergency Management Agency
GPS	Global Positioning System
NL	Not listed
NRCS	Natural Resources Conservation Service
OBL	Obligate
PEM	palustrine emergent
PLSS	Public Land Survey System
project	Western Placer Waste Management Authority Master Planning Project
UPL	Upland
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USGS	U.S. Geological Survey
WPWMA	Western Placer Waste Management Authority

SECTION 1

Introduction

This aquatic resources delineation report presents the methods and results of the waters of the United States (U.S.) delineation for the Western Placer Waste Management Authority (WPWMA) Master Planning Project (project) in Placer County, California. This introductory section provides a summary-level description of the project background and location, report objectives, and environmental setting.

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1.1 Background and Location

The WPWMA proposes to expand existing operations at the Western Regional Sanitary Landfill and Materials Recovery Facility (Active Facility) near Roseville, California. The Active Facility (landfill, compost facility, materials recovery facility, and ancillary operations) is located approximately 2 miles west of Highway 65 and north of Roseville in Placer County (Figure 1; all figures cited in this report are located in Appendix A). The Active Facility can be accessed by exiting State Route 65 at Twelve Bridges Drive, heading west to Industrial Avenue, south to Athens Avenue, and west to the intersection of Athens Avenue and Fiddyment Road. The Active Facility is situated in the southeast corner of the intersection of Athens Avenue and Fiddyment Road at 3033 Fiddyment Road, Roseville, California 95747. The survey areas for the delineation encompass three properties owned by WPWMA on the east and west sides of the Active Facility where potential expansion may occur and a small, triangle-shaped mitigation area south of the facility (Figure 2). Table 1-1 shows the total acreages and locational descriptions of each survey area property.

Table 1-1. Survey Areas for the WPWMA Expansion Project

Survey Area	Approximate Acres	PLSS	Latitude/Longitude	Location Description
Eastern Property	155	11N 06E 05	38.83165 -121.33785	South of Athens Avenue on the eastern side of the existing landfill area, approximately 0.5 mile east of Fiddyment Road.
Northwest Property	153	12N 06E 31	38.84233 -121.35406	The portion of the western property north of Athens Avenue, specifically, on the west side of Fiddyment Road south of East Catlett Road, northwest of the Intersection of Athens Avenue and Fiddyment Road.
Southwest Property	306	11N 06E 06	38.83151 -121.35413	The portion of the western property south of Athens Avenue, specifically, on the west side of Fiddyment Road north of Sunset Boulevard West, southwest of the Intersection of Athens Avenue and Fiddyment Road.

South Triangle	17	11N 06E 06	38.825563 -121.34768	Southwest corner of the Active Facility, specifically, on the east side of Fiddyment Road south of the existing landfill, and northeast of the intersection of Sunset Boulevard West and Fiddyment Road.

Notes:

PLSS = Public Land Survey System: Township, Range, Section, based on the Mount Diablo Meridian.

All properties are in the Roseville U.S. Geological Survey (USGS) 7.5-minute quadrangle.

Coordinates are decimal degrees, North American Datum 1983.

1.2 Report Objectives

The objective of this aquatic resources delineation report is to present the findings of the waters of the U.S. delineation conducted for the project, and to obtain a preliminary jurisdictional determination from the U.S. Army Corps of Engineers (USACE). The preliminary jurisdictional determination will be used in future project planning and permitting efforts.

1.3 Environmental Setting

The project area is located along the eastern edge of the Hardpan Terraces subsection of the Great Valley Ecological Section (Miles and Goudey, 1997). The Hardpan Terraces subsection features terraces along the eastern edge of the Sacramento and San Joaquin valleys composed predominantly of Pleistocene alluvium derived from granitic, sedimentary, volcanic, and metamorphic sources. The landscape is characterized by gently sloping terraces with small floodplain areas and alluvial fans along the rivers and streams flowing from the Sierra Nevada mountains westward into the Sacramento and San Joaquin Rivers. Elevations throughout the project area range between 110 and 125 feet above mean sea level. The following sections provide additional information on the terrestrial vegetation, climate and hydrology, and soils.

1.3.1 Land Use and Vegetation Types

The eastern property, located south of Athens Avenue and east of Fiddyment Road (Figure 2), is undeveloped land characterized by a mosaic of upland annual grassland, seasonal wetlands (including vernal pools), and low swales. A small motor-cross area, covering approximately 16 acres of the central part of the property, was in operation for a few years starting in 2006 but has been inactive for many years. The property is currently used for seasonal cattle grazing.

The northwest property, located to the northwest of the intersection of Fiddyment Road and Athens Avenue, is mostly open grassland. Small developed areas include a parking lot and a radio-controlled model airplane runway in the northwest corner of the property and a farm residence and barn in the southwest corner of the property. The open grasslands on this property are frequently burned in the summer by the local fire departments as part of their wildland fire training activities.

The southwest property, located southwest of the intersection of Fiddyment Road and Athens Avenue, consists of active agricultural fields that are used to grow center pivot irrigated (circle irrigated) alfalfa. In addition to the alfalfa crops, the grasslands adjacent to the irrigated fields are cut for hay.

The south triangle property, located south of the existing landfill and west of Fiddyment Road, is a small triangular area that is a wetland mitigation area created as part of a previous restoration or mitigation effort. This property is characterized by grassland along with some planted native trees and shrubs and several constructed vernal pool seasonal wetlands.

Descriptions of the terrestrial vegetation communities and land use are provided in the following sections.

1.3.1.1 Annual Grassland

Annual grassland is the most common and widespread plant community in the project area and is characterized by naturalized annual grasses consisting of medusa head (*Elymus caput-medusae*)[1], ripgut brome (*Bromus diandrus*), soft brome (*Bromus hordeaceus*), Italian rye grass (*Festuca perennis*), annual fescue *(Festuca myuros*), slender oat (*Avena barbata*), and hare barley (*Hordeum murinum* ssp*. leporinum*). Common naturalized forbs include longbeak stork's bill (*Erodium botrys*), rose clover (*Trifolium hirtum*), vetch (*Vicia sativa* and *V. villosa*), prickly lettuce (*Lactuca serriola*), and lesser hawkbit (*Leontodon saxatilis*). Scattered native forbs include white brodiaea (*Triteleia hyacinthina*), ookow (*Dichelostemma congestum*), and valley tassels (*Castilleja attenuata*). The grasslands found in the project area include Wild Oat grasslands - *Avena* (*barbata, fatua*) Semi-Natural Herbaceous Stands and Annual brome grasslands – *Bromus* (*diandrus, hordeaceus*) – *Brachypodium distachyon* Semi-Natural Herbaceous Stands, and *Lolium perenne* Semi-Natural Herbaceous Stands (Perennial rye grass fields), as described in *A Manual of California Vegetation* (Sawyer et al., 2009). Seasonal wetlands and swales, described in Section 4 of this report, occur throughout the grassland habitats.

1.3.1.2 Eucalyptus Woodland

Two relatively small groves of Manna gum (*Eucalyptus viminalis*) comprise large, mature trees near the farm residence in the southwestern corner of the northwest property. These woodland areas are classified as *Eucalyptus* Semi-Natural Woodland Stands (Sawyer et al., 2009).

1.3.1.3 Agricultural

Portions of the eastern, northwest, and southwest properties, and the south triangle, support agricultural land uses. The land uses include irrigated alfalfa fields, and grasslands that support wheat (*Triticum aestivum)* and non-native grass species such as wild oat, Italian rye grass, and hood canarygrass (*Phalaris paradoxa*). The alfalfa fields and surrounding grassland on the southwest property are actively managed and cut in the spring for forage and hay. The non-native grassland on the eastern property is grazed by cattle seasonally as forage and to reduce fire hazard. The northwest property is seasonally burned to reduce fire hazard and used for wildland fire training.

1.3.2 Climate and Hydrology

The regional climate is characterized by cool, wet winters and warm, dry summers. Average annual temperatures range from a low of 35 degrees Fahrenheit (°F) in December and January to a high of 96°F in July. Average annual precipitation is 23 inches with the majority of the rainfall occurring between November and March. Less than an inch of total rainfall occurs on average between June and September (Western Regional Climate Center, 2017).

The project area is located within the Auburn Ravine and Pleasant Grove Creek-Cross Canal watersheds with hydrologic unit codes 1802016101 and 1802016103 (USGS, 2017). The watersheds collectively drain 121,135 square acres. The Auburn Ravine watershed flows into the East Side Canal in southeastern Sutter County, and the Pleasant Grove Creek-Cross Canal watershed empties into the Cross Canal and then into the Sacramento River (County of Placer, 2017). The Federal Emergency Management Agency (FEMA) has designated portions of the survey areas as flood zones A and AE, which are considered to have a 1 percent Annual Chance Flood Hazard, or as 100-year floodplain (FEMA, 2017).

[1] Taxonomic nomenclature follows the *Jepson Online Interchange for California Floristics* (University of California, Berkeley, 2017): http://ucjeps.berkeley.edu/interchange/.

1.3.3 Soils

Information on soil types was obtained from the Natural Resources Conservation Service (NRCS) S*oil Survey for Placer County, Web Soil Survey* (NRCS, 2017a) and official soil series descriptions (NRCS, 2017b). The four project area soil units are described in the following sections and shown on Figure 3.

1.3.3.1 Fiddyment Loam

Fiddyment loam soils were formed in alluvium from mixed sources and occur on level terraces, ridges, and hills. Munsell soil color charts are used to more accurately describe soil colors. The Munsell system has three components: (1) hue (a specific color), (2) value (how light or dark it is), and (3) chroma (color intensity) (NRCS, 2017b). Using the Munsell soil color system, the Fiddyment loam soil surface in a typical profile is a (10YR 5/3) (brown), slightly acid (pH 6.5), fine sandy loam that extends to a depth of 8 inches. Between 8 and 15 inches the soil is a yellowish brown (10YR 5/4), slightly acid (pH 6.5) loam that is underlain by a brown (10YR 5/3), neutral (pH 7.0), clay loam to a depth of 24 inches. Fiddyment loam soils are well drained with slow to medium runoff and very slow permeability. Water perches above the claypan (a dense, slowly permeable layer with a much higher clay content in the subsoil) for short periods after high rainfall events in the winter and early spring months, forming shallowly ponded wetland features (for example, vernal pool seasonal wetlands). Wetland features observed in the project area are described in Section 4.2.

1.3.3.2 Alamo-Fiddyment Complex

This map unit consists of 50 percent Alamo soil, 30 percent Fiddyment soils, and 20 percent minor components. Alamo soils formed in alluvium from mixed sources and occur in basins and drainages on floodplains and fan terraces. In a typical profile, the soil is a dark gray (10YR 4/1) clay to a depth of 27 inches. The surface soil is slightly acid (pH 6.1) and neutral (pH 7.0) below 9 inches. Depth to an indurated duripan (a silica-cemented subsurface horizon that slows water movement through the soil) is 27 inches (typically ranging between 20 and 30 inches). These soils are poorly drained, have very slow permeability and limited runoff, and are frequently ponded during the winter months. Fiddyment soils are described in Section 1.3.3.1.

1.3.3.3 Cometa-Fiddyment Complex

This map unit consists of 35 percent Cometa, 35 percent Fiddyment soils, and 30 percent minor components. Cometa soils were formed in alluvium from granitic sources and occur on level to gently sloping, slightly dissected older stream terraces. In a typical profile, the surface is a brown (10YR 5/3 to 7.5YR 5/4), slightly acid (pH 6.2-6.3), sandy loam to a depth of 17 inches. Between 17 and 27 inches the soil is a reddish brown (5YR 4/4), slightly acid (pH 6.4), sandy clay. Cometa soils are moderately well drained and have slow to moderate runoff and very slow permeability.

1.3.3.4 Fiddyment-Kaseberg Loam

This map unit is composed of 50 percent Fiddyment, 30 percent Kaseberg soils, and 20 percent minor components. Kaseberg soils are shallow and were formed in material weathered from consolidated sediments from mixed sources. Kaseberg soils occur on low-lying terraces and hill slopes. In a typical profile, the surface is a light brownish gray (10YR 6/2), moderate acid (pH 6.0) loam to a depth of 6 inches. Between 6 and 14 inches, the soil is a pale brown (10YR 6/3), slightly acid (pH 6.5) loam underlain by light gray (2.5Y 7/2), slightly acid (pH 6.3) silt loam. A silica-cemented hardpan is present at a depth of 16 inches. Kaseberg soils are well drained with slow or medium runoff and moderate permeability.

SECTION 2

Regulatory Overview

The federal Clean Water Act (CWA) seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA establishes water quality standards and discharge limitations, and sets authorization requirements. Authorizations associated with Sections 401 and 404 of the CWA (described in this section) are relevant to the project.

2.1 Section 401

Section 401 of the CWA (governed by 33 *United States Code* [U.S.C.] 1341) and 40 *Code of Federal Regulations* [CFR] 121) requires a water quality certification to be issued by the State, the U.S. Environmental Protection Agency (EPA), or EPA's designee. A water quality certification is required when a project will result in a discharge to waters of the U.S., and needs a federal license or permit (such as a Section 404 permit). The certification may require certain conditions to be met to ensure water quality is adequately protected.

In California, the 401 Water Quality Certification and Wetlands Program regulates discharges of fill and dredged material under CWA Section 401 and the Porter-Cologne Water Quality Control Act. Most projects are regulated by Regional Water Quality Control Boards. The State Water Resources Control Board directly regulates multiregional projects and supports and coordinates the program statewide.

2.2 Section 404

Activities that have the potential to discharge dredged or fill materials into waters of the U.S., including adjacent wetlands, are regulated under Section 404 of the CWA, governed by 33 U.S.C. 1344 and 33 CFR 323, and administered by USACE. Traditionally, USACE has interpreted CWA regulations to define "waters of the United States" within nontidal waters, in the absence of adjacent wetlands, as determined by the ordinary high water mark. Regulated activities may be permitted by a nationwide or individual permit. The Nationwide Permit Program applies to certain activities that have been preauthorized by USACE because USACE has determined that such activities would have minimal individual and cumulative adverse effects on the aquatic environment. The Individual Permit Program applies to projects that do not meet the significance thresholds or general permit conditions of the Nationwide Permit Program. Applications are submitted to USACE for permit issuance in conformance with the National Environmental Policy Act.

SECTION 3

Methods

Aquatic resource delineation field surveys were conducted across the entire survey area between May 1 and May 19, 2017, and on June 26, 2017, by CH2M HILL Engineers, Inc., biologists Russell Huddleston, Victor Leighton, Amy Hiss, and Mia Marek. The purpose of the field surveys was to identify the presence and extent of wetlands and other waters of the U.S., and collect data on vegetation, soils, and hydrologic conditions located within the survey areas. This section describes the field sampling methods used to determine and map the potentially jurisdictional features within the survey areas.

3.1 Prefield Investigation

Before the field survey, available materials pertaining to area conditions, wetlands, and other water resources were reviewed. The following materials were included in this data review:

- Soil maps and descriptions (NRCS, 2017a and 2017b; Figure 3)
- USGS topographic quadrangle maps
- National Hydrography Dataset (USGS, 2017; Figure 4)
- National Wetlands Inventory maps (U.S. Fish and Wildlife Service, 2017; Figure 4)

3.2 Field Surveys

3.2.1 Definitions

The USACE defines a wetland as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (USACE, 2014). Section 404 of the CWA (40 CFR 230.3(s)) is regulated by EPA and defines other waters of the U.S. as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide
2. All interstate waters including interstate wetlands
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters:
    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c. Which are used or could be used for industrial purposes by industries in interstate commerce
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in (1) through (4) of this section
6. The territorial sea

7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in (1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA, are not waters of the U.S.

Waters of the State, as defined by the California Water Code, Division 7, Water Quality (Section 13050-13051) defines water of the State broadly as any surface water or groundwater, including saline waters, within the boundaries of the state.

3.2.2 Methodology for Delineating Wetland and Other Aquatic Resources of the United States

The survey methodology followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008).

Because there were no riverine or tidal features in the project area, the delineation focused on wetlands and other aquatic resources within the survey areas. Information on vegetation, soils, and hydrology for wetlands and adjacent uplands within the project area was recorded on wetland determination data sheets. At each sample point, plant species were identified and the percent cover was visually estimated and recorded. The wetland indicator status for the dominant and common associated species at each sample location was determined using the National Wetland Plant List (Lichvar et al., 2016). Dominant species included the most abundant species whose cumulative cover accounted for at least 50 percent of the vegetative cover, as well as any single species that accounted for at least 20 percent of the vegetative cover (Environmental Laboratory, 1987).

Descriptions of soils were made by examining soil pits excavated using tile-spade shovel. Soil pits were generally excavated to depths of 12 inches. At each sample point, notation was made of soil morphological features such as texture, color, and redoximorphic features (soil features formed by the processes of reduction, translocation, or oxidation of iron and manganese oxides, if present) (NRCS, 2016). Given the seasonal nature of surface water in most of the wetland areas, wetland hydrology was determined based on field observations of indicators such as algal matting, defined depressional topography with notable changes in vegetation from the adjacent grassland, and cattle hoof punches (indicative of saturated soils). Long-term rainfall conditions, as well as seasonal rainfall, drainage, landscape position, general topography, and land use, were also taken into consideration while making wetland hydrology determinations.

The wetland boundary was determined based on notable changes in vegetation as well as micro-topography. Once the wetland boundary was identified, a Trimble Geo XH Global Positioning System (GPS) or iPad data collectors with Trimble GPS receivers were used to map the boundaries. Both mapping systems have post-processed submeter accuracy. Representative photographs were taken throughout the survey areas and are included in Appendix B.

SECTION 4

Results

This section presents the delineation results for the three proposed expansion properties and the south triangle mitigation area. Section 4.1 describes overall site conditions and Section 4.2 contains a detailed description of the wetlands and other aquatic resources observed on each property.

4.1 Site Conditions

The total amount of rainfall for the 2016-2017 water year in the Sacramento region was nearly double the average with a significant amount of rain falling in January and February of 2017 (California Department of Water Resources, 2017). As a result, many of the seasonal wetlands remained inundated well into April, the time of year the vernal pools would typically be starting to dry and vernal pool plants would be at peak bloom. The surveys therefore commenced in early May. At the time of the May surveys, all but the larger wetlands and irrigation ponds were dry and annual plants were in full bloom. During the May surveys, cattle were present on the eastern property, but grazing was light and was not considered to be a significant disturbance in this area. No recent disturbance was evident on any of the other properties at the time of the surveys.

4.2 Wetland and Other Aquatic Resources

Wetlands and other aquatic resources observed in the project area include seasonal wetlands, swales, irrigation ponds, irrigated wetlands, and excavated drainages (Table 4-1). Land use and disturbance appear to be major factors in both the abundance and type of wetlands and other aquatic resources observed in the project area. The number and quality of wetlands and other aquatic resources found on each property is likely due in part to differences in land use and degree of disturbance. The locations of wetlands are shown on Figures 5 through 8. Data sheets for each wetland sample point can be found in Appendix C. A complete list of plant species observed onsite is included in Appendix D.

Table 4-1. Wetlands and Other Aquatic Resources Observed in the WPWMA Project Area

Feature	Eastern Property (acres)	Northwest Property (acres)	Southwest Property (acres)	South Triangle (acres)
Seasonal Wetland	5.35	2.22	0	0.94
Swale	6.38	4.88	0.03	0
Irrigation Pond	0	0	2.45	0
Irrigated Wetland	0	0	1.04	0
Excavated Drainage	0	0	0.02	0
Total Wetlands and Other Aquatic Resources	**11.73**	**7.10**	**3.54**	**0.94**

4.2.1 Eastern Property

Of the three WPWMA properties, the eastern property is the least disturbed and contains the most wetland and aquatic resources (Tables 4-1 and 4-2, Figure 5). Mapping of vernal pool complexes throughout the Central Valley conducted by Dr. Bob Holland between 1995 and 2012, includes the eastern property as part of a large, regional complex of medium-density vernal pool lands (California Department of Fish and Wildlife [CDFW], 2017a). During the 2017 survey, a total of 5.35 acres of

seasonal wetlands were identified on this property. Additionally, 6.38 acres of swales that likely convey surface water for brief period of time in response to heavy rainfall events were also identified on this property (Tables 4-1 and 4-2).

Table 4-2. Wetlands and Other Aquatic Resources Observed on the Eastern Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-058	Seasonal Wetland	PEM	0.20	-	38.83517	-121.3366847
SW-059	Seasonal Wetland	PEM	0.05	-	38.83145	-121.3371965
SW-060	Seasonal Wetland	PEM	0.12	-	38.83865	-121.3386435
SW-061	Seasonal Wetland	PEM	0.03	-	38.83821	-121.3384037
SW-062	Seasonal Wetland	PEM	0.03	-	38.83875	-121.3359598
SW-063	Seasonal Wetland	PEM	0.01	-	38.83555	-121.3355419
SW-064	Seasonal Wetland	PEM	0.04	-	38.83385	-121.3355288
SW-065	Seasonal Wetland	PEM	0.03	-	38.83404	-121.3381406
SW-066	Seasonal Wetland	PEM	0.18	-	38.83326	-121.3380098
SW-067	Seasonal Wetland	PEM	0.02	-	38.83143	-121.3355367
SW-068	Seasonal Wetland	PEM	0.03	-	38.83089	-121.3359337
SW-069	Seasonal Wetland	PEM	0.10	-	38.83058	-121.335517
SW-070	Seasonal Wetland	PEM	0.05	-	38.82788	-121.3355229
SW-071	Seasonal Wetland	PEM	0.03	-	38.82598	-121.3360804
SW-072	Seasonal Wetland	PEM	0.10	-	38.83754	-121.3392834
SW-073	Seasonal Wetland	PEM	0.04	-	38.83303	-121.3384449
SW-074	Seasonal Wetland	PEM	0.01	-	38.83286	-121.3384012
SW-075	Seasonal Wetland	PEM	0.02	-	38.83268	-121.338041
SW-076	Seasonal Wetland	PEM	0.01	-	38.83215	-121.3381182
SW-077	Seasonal Wetland	PEM	0.00	-	38.83224	-121.3380003
SW-078	Seasonal Wetland	PEM	0.01	-	38.83211	-121.3380785
SW-079	Seasonal Wetland	PEM	0.00	-	38.83155	-121.3384209
SW-080	Seasonal Wetland	PEM	0.00	-	38.83151	-121.3383361
SW-081	Seasonal Wetland	PEM	0.00	-	38.83148	-121.3383016
SW-082	Seasonal Wetland	PEM	0.00	-	38.83117	-121.3383512
SW-083	Seasonal Wetland	PEM	0.05	-	38.83022	-121.3386174
SW-084	Seasonal Wetland	PEM	0.16	-	38.82991	-121.3383449
SW-085	Seasonal Wetland	PEM	0.01	-	38.82929	-121.3383969
SW-086	Seasonal Wetland	PEM	0.09	-	38.82968	-121.3391677
SW-087	Seasonal Wetland	PEM	0.07	-	38.82891	-121.3394825

Table 4-2. Wetlands and Other Aquatic Resources Observed on the Eastern Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-088	Seasonal Wetland	PEM	0.36	-	38.83131	-121.339855
SW-089	Seasonal Wetland	PEM	0.04	-	38.83578	-121.338856
SW-090	Seasonal Wetland	PEM	0.03	-	38.83591	-121.3387475
SW-091	Seasonal Wetland	PEM	0.01	-	38.8355	-121.3397484
SW-092	Seasonal Wetland	PEM	0.00	-	38.83422	-121.3394228
SW-093	Seasonal Wetland	PEM	0.01	-	38.83369	-121.3397577
SW-094	Seasonal Wetland	PEM	0.05	-	38.83861	-121.3397106
SW-095	Seasonal Wetland	PEM	0.03	-	38.83794	-121.3398855
SW-096	Seasonal Wetland	PEM	0.02	-	38.83528	-121.3379235
SW-097	Seasonal Wetland	PEM	0.02	-	38.83518	-121.3376418
SW-098	Seasonal Wetland	PEM	0.00	-	38.82983	-121.3370564
SW-099	Seasonal Wetland	PEM	0.01	-	38.82599	-121.337389
SW-142	Seasonal Wetland	PEM	0.04	-	38.83574	-121.3367939
SW-143	Seasonal Wetland	PEM	0.09	-	38.83232	-121.3383511
SW-144	Seasonal Wetland	PEM	0.05	-	38.83252	-121.3382797
SW-145	Seasonal Wetland	PEM	0.06	-	38.83115	-121.3368606
SW-146	Seasonal Wetland	PEM	0.08	-	38.82958	-121.3388644
SW-147	Seasonal Wetland	PEM	0.06	-	38.8383	-121.3368121
SW-148	Seasonal Wetland	PEM	0.06	-	38.83756	-121.3368169
SW-149	Seasonal Wetland	PEM	0.32	-	38.83819	-121.3360538
SW-150	Seasonal Wetland	PEM	0.12	-	38.83631	-121.3366714
SW-151	Seasonal Wetland	PEM	0.08	-	38.83523	-121.3356036
SW-152	Seasonal Wetland	PEM	0.13	-	38.83149	-121.3364993
SW-153	Seasonal Wetland	PEM	0.10	-	38.82999	-121.3355306
SW-154	Seasonal Wetland	PEM	0.11	-	38.82891	-121.3355105
SW-155	Seasonal Wetland	PEM	0.01	-	38.8316	-121.3382546
SW-156	Seasonal Wetland	PEM	0.11	-	38.83177	-121.3384178
SW-157	Seasonal Wetland	PEM	0.06	-	38.83094	-121.3384166
SW-158	Seasonal Wetland	PEM	0.22	-	38.83304	-121.3391935
SW-159	Seasonal Wetland	PEM	0.03	-	38.83043	-121.3377074
SW-160	Seasonal Wetland	PEM	0.01	-	38.83027	-121.3378847
SW-161	Seasonal Wetland	PEM	0.04	-	38.83038	-121.3386691
SW-162	Seasonal Wetland	PEM	0.01	-	38.82983	-121.3375464

Table 4-2. Wetlands and Other Aquatic Resources Observed on the Eastern Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-163	Seasonal Wetland	PEM	0.01	-	38.82981	-121.3376313
SW-164	Seasonal Wetland	PEM	0.11	-	38.82918	-121.3384925
SW-165	Seasonal Wetland	PEM	0.06	-	38.82904	-121.3398258
SW-166	Seasonal Wetland	PEM	0.78	-	38.82968	-121.3397842
SW-167	Seasonal Wetland	PEM	0.46	-	38.83049	-121.3397705
SW-168	Seasonal Wetland	PEM	0.01	-	38.8341	-121.3387481
SW-169	Seasonal Wetland	PEM	0.02	-	38.83541	-121.337259
SW-170	Seasonal Wetland	PEM	0.03	-	38.83381	-121.3376735
S-03	Swale	PEM	1.52	3,166.01	38.83707	-121.336336
S-04	Swale	PEM	0.01	81.03	38.83121	-121.3369606
S-05	Swale	PEM	0.09	153.27	38.83775	-121.33658
S-06	Swale	PEM	0.09	215.77	38.83782	-121.3361795
S-07	Swale	PEM	0.03	89.34	38.83835	-121.3356344
S-08	Swale	PEM	0.64	1,354.03	38.83475	-121.3361366
S-09	Swale	PEM	3.23	5,325.86	38.82566	-121.3375354
S-10	Swale	PEM	0.26	418.28	38.83044	-121.3379537
S-11	Swale	PEM	0.16	264.33	38.8297	-121.3377927
S-12	Swale	PEM	0.34	718.39	38.8344	-121.3390604

[a] Source: Cowardin et al., 1979.
Notes:
- = not applicable
PEM = palustrine emergent

Seasonal wetlands on this site range from small relatively shallow depressions that were mostly dry at the time of the May 2017 surveys, to large basins that were deep enough to remain inundated until later in the summer. Vegetation around the edge of seasonal wetland basins is generally characterized by naturalized species such as Mediterranean barley, Italian rye grass, lesser hawkbit, curly dock, and hyssop loosestrife. Some seasonal wetlands were characterized almost entirely by these non-native species. The central and deeper areas of vernal pool seasonal wetlands are characterized by native species such as vernal pool buttercup (*Ranunculus bonariensis*), popcorn flower (*Plagiobothrys* spp.), smooth goldfields (*Lasthenia glaberrima*), downingia (*Downingia* spp.), and creeping spikerush (*Eleocharis macrostachya*). One California Rare Plant Rank (CRPR) 2B.2 species, dwarf downingia (*Downingia pusilla*), was observed in flower in a large vernal pool seasonal wetland located at the western edge of the property (Figure 5). Several hundred plants were found within this large wetland feature. A photograph of this species is provided in Appendix B. Soils in seasonal wetlands were typically a dark grayish brown (Munsell soil color 10YR 4/2) silty clay loam with 2 to 10 percent dark brown (Munsell soil color 7.5YR 3/4) iron concentrations in the soil matrix.

Several linear swale features occur throughout this property, including a large swale complex in the southern half of the property (Figure 5) and one in the very northern part of the property, near Athens Avenue. These features are characterized by low, sometimes weakly expressed, linear, topographic

depressions that appear to convey surface water for short durations in response to heavy rainfall. In some instances, these swales either contain seasonal wetlands, or convey surface water into or out of these features. Vegetation throughout the swales includes lesser hawkbit, Mediterranean barley, Italian rye grass, and toad rush (*Juncus bufonius*). Surface soils associated with the swale features within this property are typically a brown (10YR 4/3) silty clay loam with 2 percent strong brown (7.5YR 4/6) iron concentrations in the matrix, underlain by brown (10YR 4/3) silty clay with 5 percent strong brown (7.5YR 4/6) iron concentrations in the matrix.

The general hydrology gradient on this property flows from the northwest to the southeast in the northern half and northeast to southwest in the southern half of the property.

4.2.2 Northwest Property

Some areas of the northwest property, including the model airplane field and farm residence, have been leveled or developed and no wetlands or aquatic resources were observed in these areas. The remaining areas of this property have not been developed, but appear to have a number of compacted roads, altered depressional areas, and a low berm. This property is also used a wildland fire training area and is subject to frequent controlled burns.

Wetlands and aquatic resources observed on this property include natural depressional basins as well as areas along compacted roadways that are likely seasonally inundated and other created depressions that have developed wetland characteristics. There is also a low topographic swale feature along the east side of the property that appears to convey occasional flows in response to high rainfall events (Figure 6). This property was mapped as containing medium-density vernal pool seasonal wetlands by Dr. Holland in 1995, but was not included in subsequent mapping of vernal pool complexes in the area (CDFW, 2017a).

During the 2017 survey, a total of 2.22 acres of seasonal wetlands were identified on the northwest property (Table 4-1). Additionally, a total of 4.88 acres of swales that likely convey surface water for brief period of time in response to heavy rainfall events were identified (Tables 4-1 and 4-3, Figure 6).

Table 4-3. Wetlands and Other Aquatic Resources Observed on the Northwest Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-001	Seasonal Wetland	PEM	0.003	-	38.8438	-121.3558458
SW-002	Seasonal Wetland	PEM	0.015	-	38.84361	-121.3558333
SW-003	Seasonal Wetland	PEM	0.003	-	38.84258	-121.3566426
SW-004	Seasonal Wetland	PEM	0.007	-	38.84033	-121.3571562
SW-005	Seasonal Wetland	PEM	0.004	-	38.84029	-121.3575433
SW-006	Seasonal Wetland	PEM	0.029	-	38.84244	-121.3557199
SW-007	Seasonal Wetland	PEM	0.003	-	38.84284	-121.351628
SW-008	Seasonal Wetland	PEM	0.005	-	38.84274	-121.3511549
SW-009	Seasonal Wetland	PEM	0.005	-	38.84274	-121.3506696
SW-010	Seasonal Wetland	PEM	0.009	-	38.84274	-121.3505599
SW-011	Seasonal Wetland	PEM	0.001	-	38.84273	-121.3501694
SW-012	Seasonal Wetland	PEM	0.244	-	38.84598	-121.3561026
SW-013	Seasonal Wetland	PEM	0.036	-	38.84421	-121.3525584
SW-014	Seasonal Wetland	PEM	0.002	-	38.84469	-121.3526374

Table 4-3. Wetlands and Other Aquatic Resources Observed on the Northwest Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-015	Seasonal Wetland	PEM	0.023	-	38.84528	-121.3528074
SW-016	Seasonal Wetland	PEM	0.003	-	38.84537	-121.352926
SW-017	Seasonal Wetland	PEM	0.002	-	38.84522	-121.353068
SW-018	Seasonal Wetland	PEM	0.007	-	38.84559	-121.3538432
SW-019	Seasonal Wetland	PEM	0.002	-	38.84568	-121.3541311
SW-020	Seasonal Wetland	PEM	0.008	-	38.84576	-121.3542567
SW-021	Seasonal Wetland	PEM	0.005	-	38.84223	-121.3522195
SW-022	Seasonal Wetland	PEM	0.008	-	38.84168	-121.351414
SW-023	Seasonal Wetland	PEM	0.001	-	38.83994	-121.3504699
SW-024	Seasonal Wetland	PEM	0.020	-	38.84453	-121.3563305
SW-025	Seasonal Wetland	PEM	0.010	-	38.84437	-121.3558802
SW-026	Seasonal Wetland	PEM	0.111	-	38.84411	-121.3563045
SW-027	Seasonal Wetland	PEM	0.005	-	38.84372	-121.3566044
SW-028	Seasonal Wetland	PEM	0.004	-	38.84291	-121.3560526
SW-029	Seasonal Wetland	PEM	0.008	-	38.84312	-121.3530687
SW-030	Seasonal Wetland	PEM	0.009	-	38.84395	-121.3513913
SW-031	Seasonal Wetland	PEM	0.050	-	38.84582	-121.3539383
SW-032	Seasonal Wetland	PEM	0.008	-	38.8461	-121.3546135
SW-033	Seasonal Wetland	PEM	0.005	-	38.83965	-121.3543443
SW-034	Seasonal Wetland	PEM	0.021	-	38.84057	-121.3535667
SW-035	Seasonal Wetland	PEM	0.007	-	38.84023	-121.3535275
SW-036	Seasonal Wetland	PEM	0.022	-	38.84253	-121.3513988
SW-037	Seasonal Wetland	PEM	0.011	-	38.84129	-121.35023
SW-038	Seasonal Wetland	PEM	0.044	-	38.8411	-121.3501326
SW-039	Seasonal Wetland	PEM	0.002	-	38.84028	-121.3503425
SW-040	Seasonal Wetland	PEM	0.010	-	38.84015	-121.3503501
SW-054	Seasonal Wetland	PEM	0.062	-	38.84608	-121.3508028
SW-055	Seasonal Wetland	PEM	0.119	-	38.84605	-121.3521035
SW-056	Seasonal Wetland	PEM	0.004	-	38.84531	-121.3559196
SW-057	Seasonal Wetland	PEM	0.005	-	38.84542	-121.3559168
SW-100	Seasonal Wetland	PEM	0.006	-	38.84403	-121.3558506
SW-101	Seasonal Wetland	PEM	0.007	-	38.84392	-121.3558544
SW-102	Seasonal Wetland	PEM	0.015	-	38.84271	-121.3531224
SW-103	Seasonal Wetland	PEM	0.010	-	38.84272	-121.3527624

Table 4-3. Wetlands and Other Aquatic Resources Observed on the Northwest Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-104	Seasonal Wetland	PEM	0.003	-	38.84288	-121.3529544
SW-105	Seasonal Wetland	PEM	0.005	-	38.84288	-121.3528391
SW-106	Seasonal Wetland	PEM	0.016	-	38.8427	-121.3522982
SW-107	Seasonal Wetland	PEM	0.005	-	38.84277	-121.3523168
SW-108	Seasonal Wetland	PEM	0.014	-	38.84272	-121.3519886
SW-109	Seasonal Wetland	PEM	0.065	-	38.84441	-121.3522253
SW-110	Seasonal Wetland	PEM	0.003	-	38.84527	-121.3535416
SW-111	Seasonal Wetland	PEM	0.017	-	38.84525	-121.3536508
SW-112	Seasonal Wetland	PEM	0.006	-	38.84553	-121.3536809
SW-113	Seasonal Wetland	PEM	0.016	-	38.846	-121.3545191
SW-114	Seasonal Wetland	PEM	0.033	-	38.84032	-121.3555297
SW-115	Seasonal Wetland	PEM	0.035	-	38.84244	-121.3523349
SW-116	Seasonal Wetland	PEM	0.028	-	38.84253	-121.3520552
SW-117	Seasonal Wetland	PEM	0.042	-	38.84196	-121.3512494
SW-118	Seasonal Wetland	PEM	0.003	-	38.84484	-121.356121
SW-119	Seasonal Wetland	PEM	0.004	-	38.84438	-121.3559934
SW-120	Seasonal Wetland	PEM	0.069	-	38.84191	-121.3583234
SW-121	Seasonal Wetland	PEM	0.039	-	38.84086	-121.3583207
SW-122	Seasonal Wetland	PEM	0.091	-	38.84048	-121.3582409
SW-123	Seasonal Wetland	PEM	0.005	-	38.84331	-121.3525312
SW-124	Seasonal Wetland	PEM	0.015	-	38.84486	-121.3523921
SW-125	Seasonal Wetland	PEM	0.004	-	38.84501	-121.352474
SW-126	Seasonal Wetland	PEM	0.010	-	38.84525	-121.3524736
SW-127	Seasonal Wetland	PEM	0.008	-	38.84544	-121.3535178
SW-128	Seasonal Wetland	PEM	0.006	-	38.84553	-121.3535966
SW-129	Seasonal Wetland	PEM	0.006	-	38.84613	-121.3546848
SW-130	Seasonal Wetland	PEM	0.550	-	38.84232	-121.3534931
SW-131	Seasonal Wetland	PEM	0.073	-	38.84195	-121.3507094
SW-139	Seasonal Wetland	PEM	0.016	-	38.84483	-121.3558949
SW-140	Seasonal Wetland	PEM	0.008	-	38.84519	-121.3559071
SW-141	Seasonal Wetland	PEM	0.020	-	38.84602	-121.3562418
S-13	Swale	PEM	4.883	3,897.10	38.84282	-121.3522099

[a] Source: Cowardin et al., 1979.

Notes:

- = not applicable

PEM = palustrine emergent

Seasonal wetlands mapped on this property include both natural depressional basins as well as areas that appear to be associated with compacted roads that were characterized by similar vegetation. Characteristic plant species included vernal pool buttercup, popcorn flower, downingia, woolly marbles, and in some of the deeper areas, creeping spikerush. Soils on this property were more variable than the other properties, with some of the vernal pool areas having a brown (7.5YR 4/3) sandy loam with up to 15 percent strong brown (7.5YR 4/6) concentration in the upper part, and others with a mix of brown (7.5YR 4/2) and dark brown (7.5YR 3/4) silty clay loam in the upper part.

Typical vegetation in these areas includes Mediterranean barley, Italian rye grass, hyssop loosestrife, lesser hawkbit, and Fitch's tarweed (*Centromadia fitchii*). Soils from sample points within this property included mixed brown (7.5YR 4/3; 7.5YR 4/2) and dark brown (7.5YR 3/4) silty clay loams and sandy clay loams.

The large swale feature on the east side of the property is a weakly expressed topographic feature that was generally not evident in the field, other than the culverts at Fiddyment Road and East Catlett Road. This is a blue line feature on the National Wetlands Inventory map (Figure 4). This feature does not have any defined bed and bank characteristic evident during the time of the May survey with the exception of notable scouring near the northern culvert at East Catlett Road. Observations of two dead fish species in this general area, as well as aerial imagery of the property obtained from Google Earth and National Wetlands Inventory maps, all suggest that water at least occasionally flows through this swale. Vegetation throughout this part of the property, including the low swale, is characterized by dense cover of Italian rye grass.

The general hydrology gradient on this property is from the northwest to the southeast of the property.

4.2.3 Southwest Property

The southwest property is the most altered of the three WPWMA properties, consisting of cultivated and irrigated fields. This property appears to have been farmed for a long time as it was not included on the 1995 vernal pool maps or any subsequent vernal pool mapping (CDFW, 2017b). Wetlands and aquatic resources on this property all appear to be the result of agricultural irrigation.

Two constructed ponds on the north side of the center pivot irrigated alfalfa fields are used to capture and hold irrigation water (Figure 7). At the time of the survey, both ponds were full of water, but these ponds appear to dry later in the season after the fields have been harvested and irrigation water is not used. As shown in Table 4-1, 0.03 acre of swales, 2.45 acres of irrigation ponds, 1.04 acres of irrigated wetlands, and 0.02 acre of excavated drainage were mapped. The total amount of wetlands and other aquatic resources on the northwest property is 3.54 acres (Tables 4-1 and 4-4, Figure 7).

Table 4-4. Wetlands and Other Aquatic Resources Observed on the Southwest Property

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
AP-01	Agricultural Pond	L1OW	1.332	-	38.83848	-121.35020
AP-02	Agricultural Pond	L1OW	1.118	-	38.83771	-121.35802
D-01	Ditch	-	0.016	139.64	38.83730	-121.35760
IW-01	Irrigated Wetland	PEM	0.382	-	38.82486	-121.35631
IW-02	Irrigated Wetland	PEM	0.657	-	38.82778	-121.35054
S-01	Swale	PEM	0.007	29.40	38.83221	-121.35214
S-02	Swale	PEM	0.023	177.95	38.82469	-121.35774

[a] Source: Cowardin et al., 1979.
Notes:
- = not applicable
PEM = palustrine emergent

Vegetation around the water's edge at the time of the survey included Italian rye grass, Mediterranean barley, hyssop loosestrife, smooth goldfields, popcorn flower, creeping spikerush, and water pygmy weed (*Crassula aquatica*).

Other wetland areas, in the southern part of this property, appear to have developed as the result of excess irrigation water. The irrigated wetland in the southwest corner of this property is characterized by creeping spikerush, vernal pool buttercup, manna grass (*Glyceria x occidentalis*) and Italian rye grass. There is also an irrigated wetland on the east side of the southern alfalfa field, where vegetation includes manna grass, Italian rye grass, Mediterranean barley, tall flatsedge (*Cyperus eragrostis*), hyssop loosestrife, annual bluegrass (*Poa annua*), with some popcorn flower and annual hairgrass (*Deschampsia danthonioides*). In addition to these irrigated wetlands, there are a few small excavated drainages and swales in the southern part of the property that also appear to drain irrigation runoff.

This property has a rise in the central portion with flow gradients from the center to the northwest, northeast, southwest, and southeast corner of the property.

4.2.4 South Triangle

The south triangle contains both naturalized and created seasonal wetlands that were created for wetland mitigation. During the 2017 survey, 0.94 acre of seasonal wetlands were identified on the south triangle. Naturalized seasonal wetlands are located on the western side of this parcel (Tables 4-1 and 4-5, Figure 8) and are characterized by creeping spikerush, curly dock, coyote thistle (*Eryngium castrense*), and Italian rye grass. The entire area appears to have been altered, creating depressional and scraped features. The southwestern portion of the parcel has earthen berms planted with non-native conifers (*Pinus* sp.), which act as a visual buffer for the landfill. These berms retain water and create naturalized wetlands. The created vernal pool seasonal wetlands on this parcel occur in well-defined topographic basins with coyote thistle, smooth goldfields, popcorn flower, Fremont's goldfields (*Lasthenia fremontii*), vernal pool buttercup, Italian rye grass, hyssop loosestrife, and curly dock. The general hydrology gradient on this parcel is from the northeast to the southwest.

Table 4-5. Wetlands and Other Aquatic Resources Observed on the South Triangle

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-042	Seasonal Wetland	PEM	0.097	-	38.82616	-121.34877
SW-043	Seasonal Wetland	PEM	0.041	-	38.82632	-121.34857
SW-044	Seasonal Wetland	PEM	0.008	-	38.82649	-121.34853
SW-045	Seasonal Wetland	PEM	0.002	-	38.82615	-121.34851
SW-046	Seasonal Wetland	PEM	0.001	-	38.82602	-121.34839
SW-047	Seasonal Wetland	PEM	0.118	-	38.82464	-121.34875
SW-048	Seasonal Wetland	PEM	0.016	-	38.82499	-121.34695
SW-049	Seasonal Wetland	PEM	0.053	-	38.82515	-121.34667
SW-050	Seasonal Wetland	PEM	0.004	-	38.82531	-121.34687
SW-051	Seasonal Wetland	PEM	0.050	-	38.82552	-121.34632
SW-052	Seasonal Wetland	PEM	0.003	-	38.82559	-121.34778
SW-053	Seasonal Wetland	PEM	0.006	-	38.82557	-121.34778
SW-132	Seasonal Wetland	PEM	0.046	-	38.82546	-121.34682
SW-133	Seasonal Wetland	PEM	0.009	-	38.82539	-121.34660

Table 4-5. Wetlands and Other Aquatic Resources Observed on the South Triangle

Feature ID	Feature Type	Cowardin Class[a]	Area (acres)	Length (linear feet)	Latitude	Longitude
SW-134	Seasonal Wetland	PEM	0.003	-	38.82520	-121.34600
SW-135	Seasonal Wetland	PEM	0.064	-	38.82537	-121.34873
SW-136	Seasonal Wetland	PEM	0.099	-	38.82480	-121.34793
SW-137	Seasonal Wetland	PEM	0.029	-	38.82553	-121.34655
SW-138	Seasonal Wetland	PEM	0.053	-	38.82575	-121.34761
SP-1	Seasonal Wetland (Pond)	PEM	0.237	-	38.82573	-121.34877

[a] Source: Cowardin et al., 1979.
Notes:
- = not applicable
PEM = palustrine emergent

SECTION 5

Conclusions

The delineation identified numerous potentially jurisdictional wetlands and other aquatic resources throughout the survey areas (Table 4-1). The eastern property included the greatest number and acreage of wetland and aquatic features, followed by the northwest and southwest properties, and the south triangle, respectively. The vernal pool seasonal wetlands observed on the south triangle appear to have been constructed as part of a previous restoration or mitigation effort. Relative to the other properties, the southwest property appears the most disturbed as a result of its agricultural use, and contains the lowest-quality wetland and aquatic resources, while the eastern property contains the highest-quality wetland habitat.

SECTION 6

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Appendix A
Figures

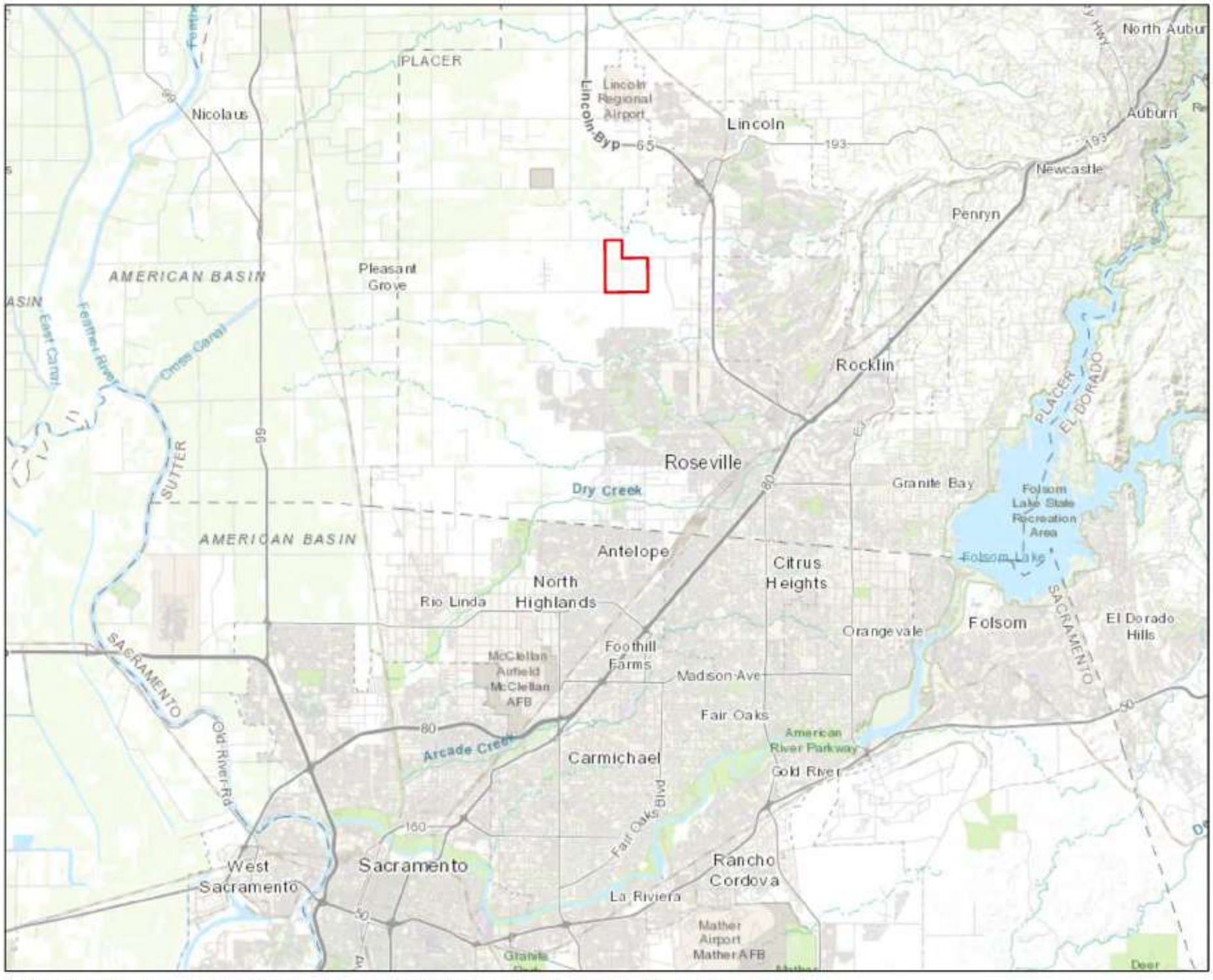


FIGURE 1
Regional Location Map
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

Legend

- Active Facility
- Survey Areas
- WPWMA Potential Expansion Areas

Map Date:12/12/2017

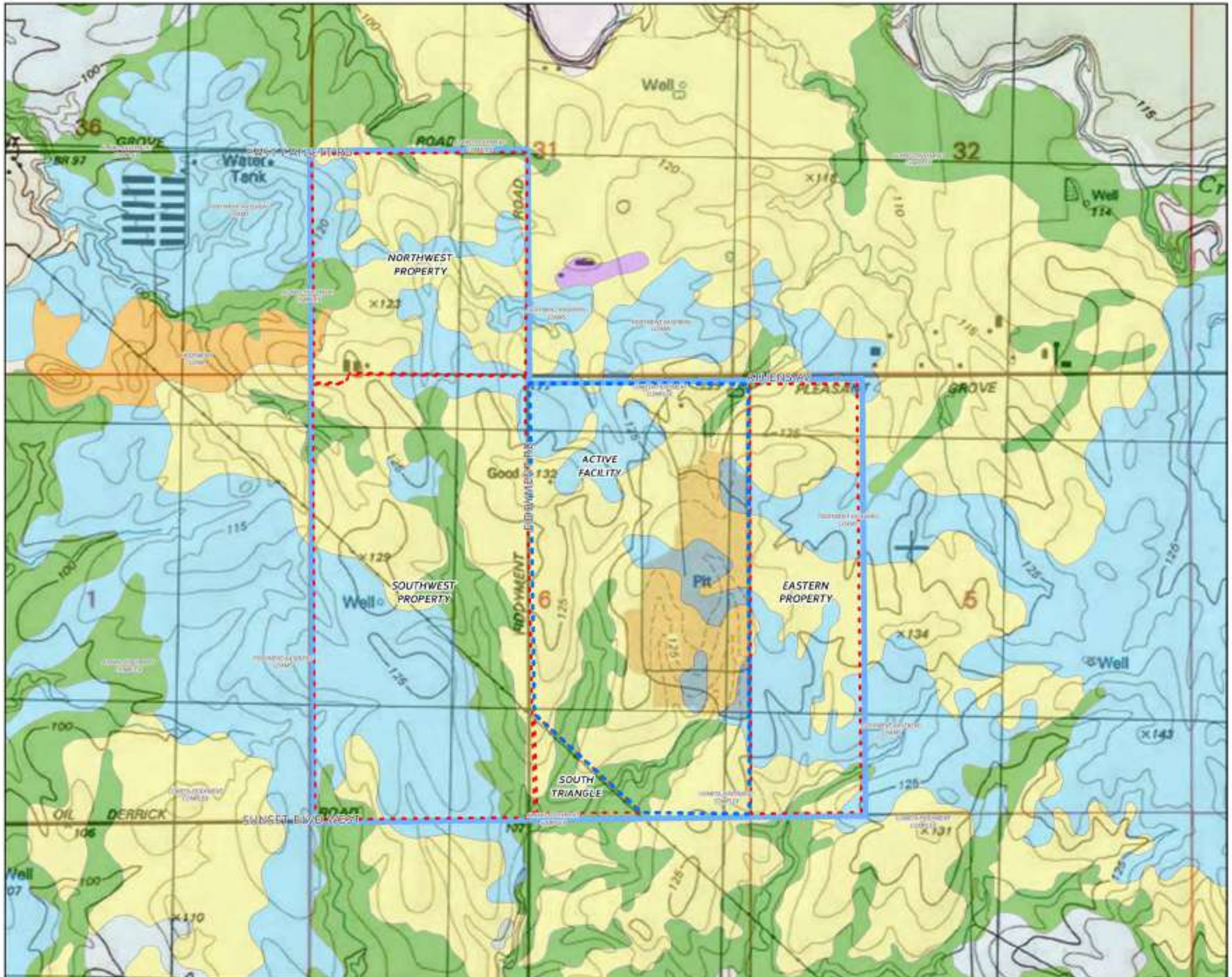
Aerial Imagery Sources:
Drone image flown by WPWMA, 2016
ESRI basemap imagery: NAIP 2016, 7/10/2016

N

0 1,000 2,000
Feet

FIGURE 2
Project Survey Areas
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

ch2m



VICINITY MAP

Legend

- Active Facility
- Survey Areas
- WPWMA Potential Expansion Areas

Soil Type

- Alamo-Fiddyment complex, 0 to 5 percent slopes
- Cometa-Fiddyment complex, 1 to 5 percent slopes
- Cometa-Ramona sandy loams, 1 to 5 percent slopes
- Fiddyment loam, 1 to 8 percent slopes
- Fiddyment-Kaseberg loams, 2 to 9 percent slopes

USGS QUAD:
ROSEVILLE

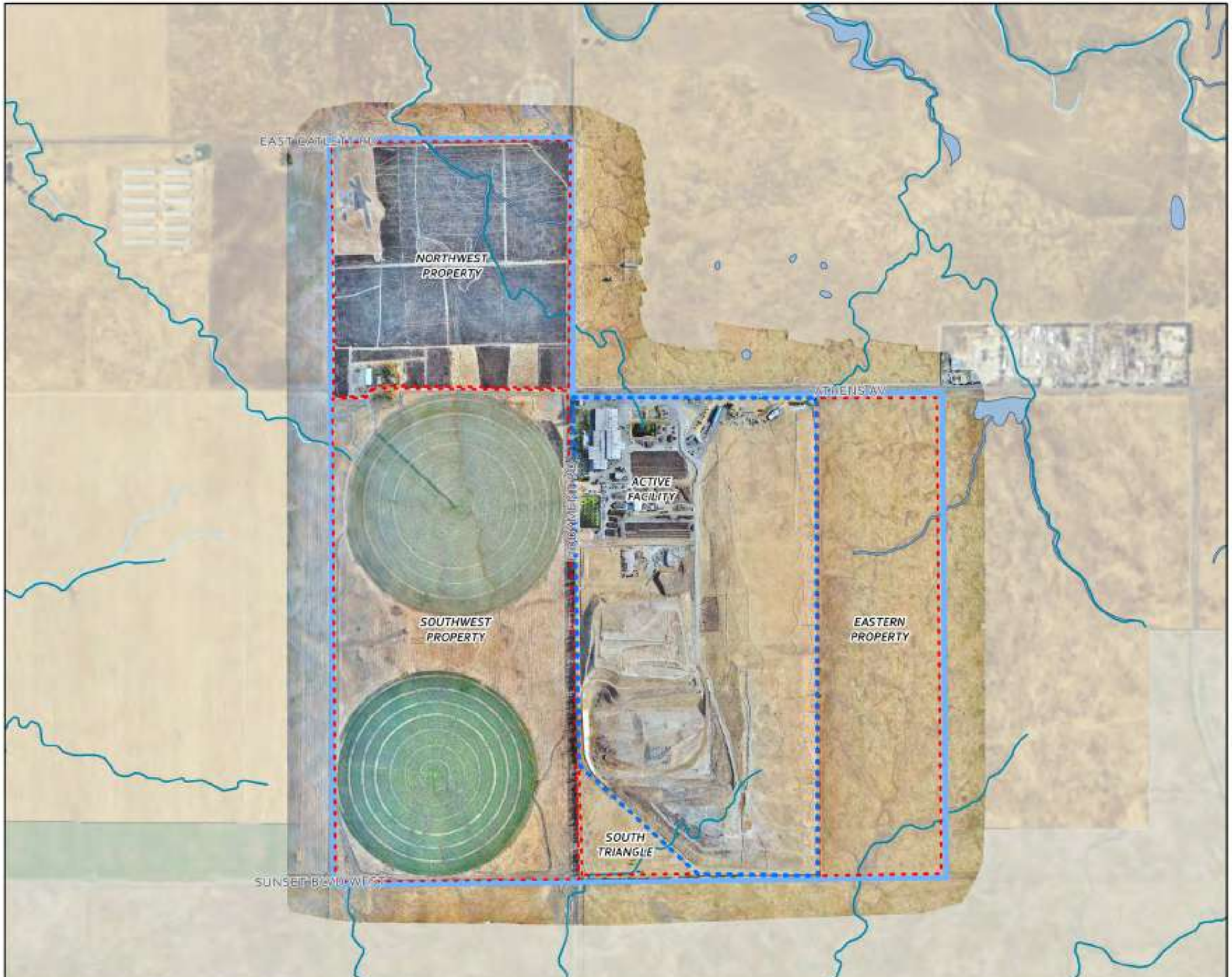
Map Date:12/12/2017

N

0 1,000 2,000
Feet

FIGURE 3
Soil Types
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

ch2m



VICINITY MAP

Legend

- Active Facility
- Survey Areas
- WPWMA Potential Expansion Areas

USA National Hydrography Dataset

- Stream/River

National Wetlands Inventory

- Freshwater Emergent Wetland
- Riverine

Map Date:12/12/2017

Aerial Imagery Sources:
Drone image flown by WPWMA, 2016
ESRI basemap imagery: NAIP 2016, 7/10/2016

N

0 1,000 2,000
Feet

FIGURE 4
National Wetlands Inventory and National Hydrography Dataset Features
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

ch2m

Legend

- Seasonal Wetland (5.35 acres)
- Swale (6.38 acres)
- Sample Points
- Active Facility
- Survey Areas
- WPWMA Properties

Map Date:3/19/2018

0 200 400
Feet

N

Aerial Imagery Sources:
Drone image flown by WPWMA, 2016
ESRI basemap imagery: NAIP 2016, 7/10/2016

FIGURE 5
Jurisdictional Wetlands and Other Aquatic Resources East Property
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

ch2m

Legend

- Sample Point
- Seasonal Wetland (2.22 acres)
- Swale (4.88 acres)
- Survey Areas
- WPWMA Properties

Map Date:3/19/2018

Aerial Imagery Sources:
Drone image flown by WPWMA, 2016
ESRI basemap imagery: NAIP 2016, 7/10/2016

N

0 500 1,000
Feet

FIGURE 6
Jurisdictional Wetlands and Other Aquatic Resources Northwest Property
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California


ATHENS AV
FIDDYMENT RD
SUNSET BLVD WEST
Yuba City
Roseville
Sacramento
Elk Grove
Legend
Excavated Drainage (0.02 acre)
Culvert
Active Facility
Survey Areas
WPWMA Properties
Irrigation Pond (2.45 acres)
Irrigated Wetland (1.04 acres)
Swale (0.03 acre)
Map Date:3/19/2018
N
0
200
400
Feet
Aerial Imagery Sources:
Drone image flown by WPWMA, 2018
ESRI basemap imagery: NAIP 2016, 7/10/2016
FIGURE 7
Jurisdictional Wetlands and Other Aquatic Resources Southwest Property
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California
ch2m

VICINITY MAP

Legend

- Culvert
- Seasonal Wetland (0.94 acre)
- Active Facility
- Survey Areas
- WPWMA Properties

Map Date:3/19/2018

Aerial Imagery Sources:
Drone image flown by WPWMA. 2016
ESRI basemap imagery: NAIP 2016. 7/10/2016

N

0 500 1,000
Feet

FIGURE 8
Jurisdictional Wetlands and Other Aquatic Resources South Triangle
WPWMA Aquatic Resources Delineation Report
WPWMA, Placer County, California

\\BROOKSIDE\GIS_SHARE\ENBG\00_PROJ\W\WPWMA\MAPS\REPORT\USACE_WETLANDREPORT_2018\USACE_WETLANDREPORT.APRX SSCOPES 3/19/2018 11:57 AM

ch2m:

Appendix B
Representative Site Photographs

Photograph 1: View south of annual grassland on the eastern property; May 1, 2017.

Photograph 2: View southeast of annual grassland on the northwest property; May 2, 2017.

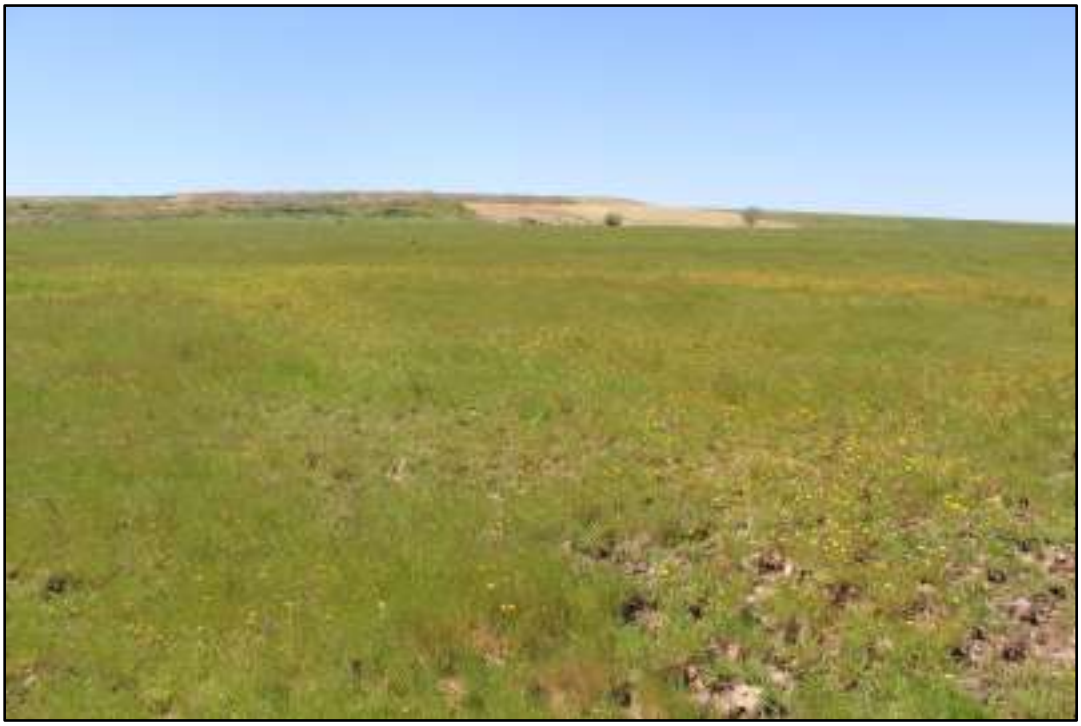
Photograph 3: View southeast of annual grassland, eucalyptus grove, and barn areas on the northwest property; May 2, 2017.

Photograph 4: View west of irrigated alfalfa and adjacent grassland on the southwest property; May 3, 2017.

Photograph 5. View north of annual grassland on the south triangle; May 3, 2017.

Photograph 6. View west of vernal pool seasonal wetland on the eastern property; May 1, 2017.

Photograph 7: Dwarf downingia (Downingia pusilla) in vernal pool seasonal wetland on the eastern property; May 1, 2017.



Photograph 7. View northwest of seasonal wetland and swale on the eastern property; May 1, 2017.

Photograph 8. View north of seasonal wetland in the northwest portion of the eastern property; May 17, 2017.

Photograph 9. View south of irrigation pond in the northwest corner of the southwest property; May 3, 2017.

Appendix C
Wetland Determination Data Sheets, Arid West Region

EP-SP-01

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-01

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 2-8

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE RAINFALL, SEASONAL WETLAND

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: N/A)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5FT)			
1. GLYCERIA X OCCIDENTALIS	45%	YES	OBL
2. RANUNCULUS BONARIENSIS	3%	____	OBL
3. PLAGIOBOTHRYS STIPITATUS	2%	____	FACW
4. RUMEX CRISPUS	TR	____	FAC
5.			
6.			
7.			
8.			
	50% = Total Cover		
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 3/2	78%	10YR 4/6	2%	C	M	SiL	
	10YR 3/6	20%					SiL	
11-16	10YR 4/1	100%					SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 11"

Depth (inches): CLAY LAYER

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: DEEP HOOF - PUNCH

NP-SP-02

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-02

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVE RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	45%	YES	NL
2. LOLIUM PERENNE*	20%	YES	FAC
3. LEONTODON SAXATILIS	20%	YES	FACU
4. VICIA VILLOSA	TR		NL
5.			
6.			
7.			
8.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: * LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	99	10YR 4/6	1%	C	M	SiL	- CONC. DRY COLOR VERY FAINT WHEN MOIST

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: N/A

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

SW. 4

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017
Applicant/Owner: WPWMA State: CA Sampling Point: SP-03
Investigator(s): R. HUDDLESTON, U. LEIGHTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil X, or Hydrology X naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL · SEASONAL WETLAND HYDROLOGY

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. RANUNCULUS BONARIENSIS	20%	YES	OBL
2. LOLIUM PERENNE*	25%	YES	FAC
3. LEONTODON SAXATILIS	20%	YES	FACU
4. LYTHRUM HYSSOPIFOLIUM	5%		OBL
5. RUMEX CRISPUS	3%		FAC
6. DOWNINGIA ORNATISSIMA	2%		OBL
7.			
8.			
	75% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 25% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/2	100%	-	-	-	-	SiCL	NO REDOX EVIDENT

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks: NO REDOX EVIDENT - HYDRIC CONDITIONS ASSUMED PRESENT - SHALLOW DEPRESSION W/ WETLAND PLANTS DISTINCT CHANGE FROM ADJACENT GRASSLAND

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017
Applicant/Owner: WPWMA State: CA Sampling Point: SP-04
Investigator(s): R. HAMPLESTON, V. LEIGHTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5FT)			
1. ELYMUS CAPUT MEDUSAE	65%	YES	NL
2. BROMUS HORDEACEUS	10%		FACU
3. LEONTADON SAXATILIS	10%		FACU
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	85% = Total Cover		

% Bare Ground in Herb Stratum 15% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	95	10YR 4/3	5%			CCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-05

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD 83

Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVERAGE SEASON RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5FT)			
1. LEONTODON SAXATILIS	60%	YES	FACU
2. LYTHRUM HYSSOPIFOLIUM	20%	YES	OBL
3. CRASSULA AQUATICA	5%		OBL
4. CENTROMADIA FITCHII	5%		FACU
5. JUNCUS BUFONIUS	2%		FACW
6. HORDEUM MARINUM	2%		FAC
7. LOLIUM PERENNE*	1%		FAC
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4.5	10YR4/2	100%	7.5YR3/4	20%			SCL	
4.5-12	10YR4/2	80%	7.5YR3/4	15%			SCL	
			10YR 3/2	5%				
12-15	10YR3/2		—	-	-	-	CLAY	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 12"

Depth (inches): CLAY

Hydric Soil Present? Yes ____ No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: HOOF-PUNCH

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 5/19/2017

Applicant/Owner: WPUMA State: CA Sampling Point: SP-06

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	70%	YES	NL
2. VICIA VILLOSA	15%		NL
3. AVENA BARBATA	5%		NL
4. HYPOCHAERIS RADICATA	5%		FACU
5. CARDUUS PYCNOCEPHALUS	TR		NL
6.			
7.			
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-7	10YR4/2	100%	—	—	—	—	SCL	
7-12	10YR4/2	100%	—	—	—	—	SC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER, CO Sampling Date: 6/26/2017
Applicant/Owner: WPWMA State: CA Sampling Point: SP-07
Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 2%
Subregion (LRR): C Lat: Long: Datum: NAD 83
Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No ____
Is the Sampled Area within a Wetland? Yes ____ No ____

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE*	20%	YES	FAC
2. HORDEUM MARINUM	20%	YES	FAC
3. POLYPOGON MONSPELIENSIS	5%		FACW
4. LEONTODON SAXATILIS	5%		FACU
5. CENTROMADIA FITCHII	5%		
6. LYTHRUM HYSSOPIFOLIA	3%		OBL
7. RUMEX CRISPUS	2%		FAC
8.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: * LOLIUM PERENNE = FESTUCA PERRENNIS

SOIL

Sampling Point: SP-07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/2	95%	7.5YR 4/6	5%	C	M/PL	SiCL	REDOX BEST SEEN WHEN SOILS DRY
4-12	10YR 4/2	90%	7.5YR 3/4	10%	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: CLAY

Depth (inches): 12"

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: LOW TOPOGRAPHIC BASIN - NOTABLE CHANGE IN VEG. CATTLE HOOF-PUNCH

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/26/2017
Applicant/Owner: LUPUMA State: CA Sampling Point: SP-08
Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: ABOVE ARE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	30%	YES	NL
2. LOLIUM PERENNE *	30%	YES	FAC
3. TRIFOLIUM HIRTUM	10%		NL
4. CROTON SETIGER	5%		NL
5. JUNCUS BUFONIUS	5%		FACW
6.			
7.			
8.			
	80% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 20% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
__ Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
* LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2	95%	10YR 4/6	5%	C	M/PL	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/26/2017
Applicant/Owner: WPWMA State: CA Sampling Point: SP.09
Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): 1.2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVE SEASONAL RAINFALL - SAMPLE POINT IN LOW SWALE FEATURE

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE*	20%	YES	FAC
2. HORDEUM MURINUM	20%	YES	FAC
3. LEONTODON ~~BARIX~~ SAXATILIS	15%	YES	FACU
4. JUNCUS BUFONIUS	10%		FACW
5.			
6.			
7.			
8.			
	65% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 35% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/3	98%	7.5YR 4/6	2%	C	M	SiCL	
4-12	10YR 4/3	90%	7.5YR 3/4	10%	C	M	CL	
12+	10YR 3/2	100%	-	-	-	-	CL	No Conc

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Low topographic swale - may be intermittently flooded in response to heavy rain but no evidence of prolonged inundation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/26/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-10

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2-2%

Subregion (LRR): Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	50%	YES	NL
2. BROMUS HORDEACEUS	20%	YES	FACU
3. CROTON SETIGER	10%		NL
4. TRIFOLIUM HIRTUM	5%		NL
5. JUNCUS BUFONIUS	5%		FACW
6. TRICHOSTEMA LANCEOLATUM	3%		FACU
7.			
8.			
	93% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 7% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/3	98%	7.5YR3/4	2%	C	M	SL	
4-12	10YR4/3	95%	7.5YR3/4	5%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-11

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 08E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes ____ No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE*	20%	YES	FAC
2. HORDEUM MARINUM	20%	YES	FAC
3. LEONTODON SAXITILIS	15%	YES	FACU
4. RUMEX CRISPUS	3%		FAC
5. LYTHRUM HYSSOPIFOLIUM	3%		OBL
6. CENTROMADIA FITCHII	3%		FACW
7. CONVOLVULUS ARVENSIS	1%		NL
8.			
	65% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 35% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: *LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR4/2	95%	7.5YR3/4	5%	C	M	SL	
3-8	10YR4/2	90%	7.5YR3/4	8%	C	RC	SCL	
			7.5YR4/6	2%	C	RC	SCL	
8+	10YR4/2	100%	—	—	—	—	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: LOW DEPRESSION W/ HOOF-PUNCH - NOTABLE CHANGE IN VEGETATION FROM ADJACENT GRASSLAND

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-12

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2-2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5FT)			
1. ELYMUS CAPUT-MEDUSAE	50%	YES	NL
2. CENTROMADIA FITCHII	10%	YES	FACW
3. BROMUS HORDEACEUS	5%	____	FACU
4. TUNICUS BUFONIUS	5%	____	FACW
5. TRIFOLIUM HIRTUM	3%	____	NL
6. CROTON SETIGER	2%	____	NL
7. LACTUCA SERRIOLA	2%	____	FACU
8. CONVOLVULUS ARVENSIS	1%	____	NL
	78% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 22% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR4/2	95%	7.5YR3/4	5%	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: SOILS SIMILAR TO ADJACENT DEPRESSIONAL FEATURE

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017
Applicant/Owner: B. WPWMA State: CA Sampling Point: SP-13
Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes X No ____

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. MA			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. PLAGIOBOTHRYS STIPITATUS	40%	YES	FACW
2. POLYPOGON MONSPELIENSIS	10%	YES	FACW
3. DESCHAMPSIA DANTHONIOIDES	5%	YES	FACW
4. LYTHRUM HYSSOPIFOLIUM	TR		OBL
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR4/3	95%	7.5YR4/6	5%	C	PL	FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: SMALL DEPRESSION AT SOUTH END OF SWALE

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017
Applicant/Owner: WPWMA State: CA Sampling Point: SP-14
Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%
Subregion (LRR): C Lat: Long: Datum: NAD 83
Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X
Is the Sampled Area within a Wetland? Yes ____ No X

Remarks: ABOVE AVG RAINFALL FOR SEASON

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	60%	YES	NL
2. BROMUS HORDEACEUS	20%	YES	FACU
3. LEONTODON SAXITILIS	10%		FACU
4. AVENA BARBATA	TR		NL
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/3	95	7.5YR 4/6	5	C	RC	FSL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks: SIMILAR SOILS TO ADJACENT DEPRESSION - BUT NOT IN CLOSED DEPRESSION

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-15

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2-2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. PLAGIOBOTHRYS STIPITATUS	10%	YES	FACW
2. LEONTODON SAXITILIS	10%	YES	FACU
3. DESCHAMPSIA DANTHONIOIDES	5%		FACW
4. POLYPOGON MONSPELIENSIS	5%		FACW
5. HORDEUM MARINUM	5%		FAC
6.			
7.			
8.			
	35% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 65% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
+07								
0-6	10YR 4/3	90%	7.5YR 4/6	10%	C	PC/M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: LARGE BASIN W/ HOOF-PUNCH. SEASONAL WETLAND HYDROLOGY

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2016

Applicant/Owner: WPWMA State: CA Sampling Point: SP16

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: _____ Long: _____ Datum: NAD 83

Soil Map Unit Name: COMPA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	50%	YES	NL
2. LOLIUM PERENNE	20%	YES	FAC
3. JUNCUS BUFONIUS	10%		FACW
4. BROMUS HORDEACEUS	5%		FACU
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/3	95%	7.5YR 4/6	5%	C	PC	SL	NOT IN A DEPRESSION

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks: SIMILAR SOILS TO ADJACENT DEPRESSIONAL AREA

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-17

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): CONCAVE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: FIDDYMENT-KASEBERG LOAMS NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL - LARGE DEEP POOL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELEOCHARIS MACROSTACHYA	50%	YES	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 7/2	90%	7.5YR 4/6	10%	C	M/PL	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- X Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

"DRY AT TIME OF SURVEY - BUT THIS AREA WAS INUNDATED THROUGH MAY OF 2017

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EASTERN PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-18

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD 83

Soil Map Unit Name: FIDDYMENT-KASEBERG LOAMS NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: SEASONAL RAINFALL ABOVE AVE.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	60%	YES	NL
2. BROMUS HORDEACEUS	20%	YES	FACU
3. TRIFOLIUM HIRTUM	5%		NL
4. CENTAUREA SOLSTITALIS	5%		NL
5.			
6.			
7.			
8.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR4/2	98%	7.5YR3/4	2%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-19

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: ALAMO-FAIRYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVG SEASONAL RAINFALL - LOW TOPOGRAPHIC SWALE

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5FT)			
1. LEONTODON SAXATILIS	30%	YES	NL
2. LOLIUM PERENNE	15%	YES	FAC
3. HORDEUM MURINUM	5%		FAC
4. JUNCUS BUFONIUS	3%		FACW
5. LYTHRUM HYSSOPIFOLIUM	2%		OBL
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 45% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	3	x 2 =	6
FAC species	20	x 3 =	60
FACU species	30	x 4 =	120
UPL species	____	x 5 =	____
Column Totals:	55 (A)		188 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-19

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 4/2	95%	10YR 3/4	5%	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks: SAME SOIL AS ADJACENT UPLAND

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: TOPOGRAPHIC SWALE - LIKELY CONVEYS INTERMITTENT FLOW BUT NO EVIDENCE OF PROLONGED INUNDATION

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: EAST PARCEL City/County: PLACER CO. Sampling Date: 6/29/2017

Applicant/Owner: LPPWMA State: CA Sampling Point: SP-20

Investigator(s): R. HUDDLESTON Section, Township, Range: 05 11N 08E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: ALAMO FIDDYMENT NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	50%	YES	NL
2. LEONTODON TARAXACOIDES	5%		
3. SAXIFILUS	5%		
4. BROMUS HORDEACEUS	15%		FACU
5. VICIA VILLOSA	10%		
6. FESTUCA PERENNE	10%		FAC
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

SOIL

Sampling Point: SP-20

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-6	10YR4/2	95%	10YR3/4	5%	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-21

Investigator(s): R. HUDDLESTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland?	Yes X No ____
Hydric Soil Present?	Yes X No ____		
Wetland Hydrology Present?	Yes X No ____		

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE	40%	YES	FAC
2. HORDEUM MARINUM	35%	YES	FAC
3. RANUNCULUS BONARIENSIS	5%	NO	OBL
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

THATCH = 30% COVER - TRACE LACTUCA SERRIOLA <5% LEONTADON SAXATILIS'S PLAGIOBOTHRYS SP.

SOIL

Sampling Point: SP-21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	7.5YR 4/2	90%	5YR 3/4	10%	C	PL/M	FSL	
10-16	7.5YR 4/1	90%	5YR 3/4	10%	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL CRUST _ MATTED VEGETATION

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-22

Investigator(s): R. HUDDLESTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVG SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LATHYRUS HIRSUTUS	50%	YES	FAC
2. ELYMUS CAPUT-MEDUSAE	20%	YES	NL
3. BROMUS DIANDRUS	5%		NL
4. BROMUS HORDEACEUS	5%		FACU
5. GERANIUM DISSECTUM	5%		NL
6. FESTUCA PERENNE	3%		FAC
7. ERODIUM BOTRYS	2%		FACU
8.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species 53	x 3 =	159
FACU species 7	x 4 =	28
UPL species 30	x 5 =	150
Column Totals: 90 (A)		____ (B)

Prevalence Index = B/A = 3.74

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-22

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					L-CAM	
2-6	7.5YR 4/2	90%	5YR 3/4	10%	C	M	FSL	
6-16	7.5YR 4/3	90%	5YR 3/4	10%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-23

Investigator(s): R. HUDDLESTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL

- APPEARS TO BE AN OLD ROAD FEATURE

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. RANUNCULUS BONARIENSIS	15%	YES	OBL
2. LOLIUM PERENNIE	3%		FAC
3. GRATICLA EMBRACTEATA	2%		OBL
4. DOWNINGIA ORNATISSIMA	2%		OBL
5. PLAGIOBOTHRYS STIPITATUS	1%		FACW
6. PSILOCARPHUS BREVISSIMUS	1%		FACW
7. VERONICA PEREGRINA	1%		FAC
8.			
	25% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 75% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: COLIUM PISRENNIE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	5YR 4/3	98%	5YR 4/6	2%	C	PC	SL	
2-16	7.5YR 4/3	100%	—	—	—	—	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks: SURFACE SOILS LIKELY BLADED - OLD ROAD - LOW AREA W/ VERNAL POOL AND OTHER WETLAND PLANTS AND EVIDENCE OF WETLAND HYDROLOGY

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-24

Investigator(s): R. HUDDLESTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD 83

Soil Map Unit Name: COMETA-FIDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5FT)			
1. ELYMUS CAPUT-MEDUSAE	25%	YES	NL
2. FESTUCA (VULPIA) BROMOIDES	25%	YES	FACU
3. BRIZA MINOR	10%		FAC
4. LATHYRUS HIRSUTUS	15%	YES	FAC
5. BROMUS HORDEACIEUS	5%		FACU
6. TRIFOLIUM HIRTUM	5%		NL
7. TRIFOLIUM DUBIUM	5%		UPL
8. LEONTADON SAXATILIS	5%		FACU
	95% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-24

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR4/3	100					LOAM	
4-16	7.5YR4/2	95	5YR3/4	5			SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-25

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2-2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA-FIDDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL - SAMPLE LOCATION IN DEPRESSION IN WHAT APPEARS TO BE AN OLD ROADWAY

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. CRASSULA AQUATICA	20%	YES	OBL
2. RANUNCULUS BONARIENSIS	15%	YES	OBL
3. DOWNINGIA ORNATISSIMA	15%	YES	OBL
4. PLAGIOBOTHRYS STIPITATUS	5%		FACW
5. LYTHRUM HYSSOPIFOLIUM	5%		OBL
6. LEONTODON SAXATILIS	5%		FACU
7. LOLIUM PERENNE	2%		FAC
8. PSILOCARPHUS BREVISSIMUS	TR		FACW
	67% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 33% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-25

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	7.5YR 4/3	85%	7.5YR 4/6	15%	C	M	SL	MN CONC.
6-12	7.5YR 4/3	80%	7.5YR 4/6	20%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-26

Investigator(s): R. HUDDLESTON, V. UBIGHTEN Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. ELYMUS CAPUT-MEDUSAE	70%	YES	NL
2. BROMUS HORDEACEUS	5%		FACU
3. LACTUCA SERRIOLA	5%		FACU
4. LOLIUM PERENNE	5%		FAC
5. FESTUCA BROMOIDES	TR		FACU
6.			
7.			
8.			
	85% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 15% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-26

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR 4/3	85%	7.5YR 4/6	10%	C	M	SL	
			7.5YR 2.5/2	5%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ____ No X

Remarks: NOT IN DEPRESSIONAL AREA - UPLAND ADJACENT TO CLD ROADWAY

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): _____

Water Table Present? Yes ____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): _____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2016

Applicant/Owner: WPWMA State: CA Sampling Point: SP-27

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 & 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. PLAGIOBOTHRYS STIPITATUS	30%	YES	FACW
2. RANUNCULUS BONARIENSIS	20%	YES	OBL
3. GLYCERIA X OCCIDENTALIS	15%	YES	OBL
4. POLYPOGON MONSPELIENSIS	5%		FACW
5. EPHYNGIUM CASTRENSE	2%		OBL
6. LYTHRUM HYSSOPIFOLIUM	2%		OBL
7. LEONTADON SAXATILIS	1%		FACU
8.			
	70% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 30% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-27

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of Indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	90%	5YR 4/6	10%	C	M	SL	MN core,
5-16	2.5Y 4/2	100%					SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP28

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks: ABOVE AVG SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5FT)			
1. BRRA MINOR	30%	YES	FAC
2. ELYMUS CAPUT-MEDUSAE	15%	YES	NL
3. FESTUCA BROMOIDES	10%		FACU
4. TRIFOLIUM HIRTUM	10%		NL
5. LOLIUM PERENNE	10%		FAC
6. TRIFOLIUM GRACILENTUM	15%	YES	NL
7. TRIFOLIUM DUBIUM	5%		UPL
8. VICIA VILLOSA	5%		NL
	100% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: LOLIUM PERENNE = FESTUCA PERENNIS

SOIL

Sampling Point: SP-28

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR 3/3	80%	7.5YR 4/6	20%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-29

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No ____	

Remarks: ABOVE AVERAGE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5FT)			
1. LASTHENIA GLABERRIMA	40%	YES	OBL
2. PLAGIOBOTHRYS STIPITATUS	35%	YES	FACW
3. RANUNCULUS BONARIENSIS	15%		OBL
4. ELEOCHARIS MACROSTACHYA	5%		OBL
5. POLYPOGON MONSPELIENSIS	2%		FACW
6. DOWNINGIA CRASSISSIMA	1%		OBL
7.			
8.			
	97% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 3% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-29

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8.5	7.5YR 4/2	75%	7.5YR 4/4	25%	C	M/PL	SL	
8.5+	10YR 5/3	80%	7.5YR 4/4	20%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-30

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 42%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMISTA - FIDDYMENT NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: ABOVE AVG SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5FT)			
1. LATHYRUS HIRSUTUS	50%	YES	FAC
2. BRIZA MINOR	20%	YES	FAC
3. FESTUCA BROMOIDES	10%		FACU
4. BROMUS HORDEACEUS	10%		FACU
5. LEONTADON TARAXI	5%		FACU
6. SAXATILIS			
7.			
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-30

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR4/3	80%	7.5YR4/4	20%	C	M	SL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-31

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA-FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks: ABOVE AVE. SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LASTHENIA GLABERRIMA	65%	YES	OBL
2. ELEOCHARIS MACROSTACHYA	20%	YES	OBL
3. DESCHAMPSIA DANTHONIOIDES	5%		FACW
4. PLAGIOBOTHRYS STIPITATUS	TR		FACW
5.			
6.			
7.			
8.			
	90% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 10% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP.31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	7.5YR 2.5/1	100%					S;L	
2.5-10	7.5YR 4/2	75%	7.5YR 3/4	25%	C	M	S;CL	
10-16	10YR 4/2	90%	7.5YR 3/4	10%	C	M	SCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-32

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 22%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVE. SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. FESTUCA BROMOIDES	60%	YES	FACU
2. BRIZA MINOR	10%		FAC
3. TRIFOLIUM DUBIUM	10%		UPL
4. BROMUS HORDEACEUS	5%		FACU
5. LEONTADON SAXATILIS	5%		FACU
6. ERODIUM BOTRYS	5%		FACU
7.			
8.			
	95% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-32

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2.5	10YR2.5/1	100%					SiL	
2.5-11	7.5YR4/2	60%					LS	
	7.5YR3/4	40%						
11-16	7.5YR3/4	80%					LS	
	7.5YR4/2	20%						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-34

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 02%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA – FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE. SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. LASTHENIA GLABERRIMA	20%	YES	OBL
2. RANUNCULUS BONARIENSIS	20%	YES	OBL
3. PLAGIOBOTHRYS STIPITATUS	10%		FACW
4. LOLIUM PERENNE	10%		FAC
5. GLYCERIA X OCCIDENTALIS	5%		OBL
6. LYTHRUM HYSSOPIFOLIUM	TR		OBL
7.			
8.			
	65% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 35% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: SP-34

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR4/2	70%	7.5YR4/4	10%	C	M	SiCL	
	7.5YR3/4	20%						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-35

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. PLAGIOBOTHRYS STIPITATUS	15%	YES	FACW
2. RANUNCULUS BONARIENSIS	15%	YES	OBL
3. LASTHENIA GLABERRIMA	5%		OBL
4. DOWNINGIA ORNATISSIMA	3%		OBL
5. DOWNINGIA BICORNUTA	2%		OBL
6.			
7.			
8.			
	40% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 60% % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: RH-35

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR3/2	95%	7.5YR4/4	5%	C	M	S. CL	
2-10	10YR3/2	90%	7.5YR4/4	10%	C	M	C	
10+6	10YR3/2	95%	10YR5/1	5%	D	M	C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ALGAE MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO Sampling Date: 5/17/2017
Applicant/Owner: WPCNMA State: CA Sampling Point: SP-36
Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E
Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): 2%
Subregion (LRR): C Lat: Long: Datum: NAD83
Soil Map Unit Name: ~~* COMPLEX - FIDDYMENT COMPLEX~~ NWI classification: NONE
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks: ABOVE AVE SEASONAL RAINFALL

* SOILS - FIDDYMENT-KASEBERG LOAMS

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. LOLIUM PERENNE	20%	YES	FAC
2. LYTHRUM HYSSOPIFOLIUM	15%	YES	OBL
3. ~~LOLIUM~~ HORDEUM MARINUM	15%	YES	FAC
4. LEONTADON SAXATILIS	10%		FACU
5.			
6.			
7.			
8.			
	60% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 40% % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks:

SOIL

Sampling Point: SP-36

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-9	7.5YR4/3	50%					SiCL	
	7.5YR4/6	40%						
	7.5YR3/1	10%						
9-16	10YR4/2	60%						
	7.5YR4/6	40%						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes X No ?

Remarks:

HIGH AMOUNTS OF 7.5YR4/6 - REDOX OR MIXED SOIL?
- VEGETATION, HYDROLOGY PRESENT SUGGEST HYDRIC CONDITIONS

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-37

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): NONE Slope (%): <2%

Subregion (LRR): C Lat: Long: Datum: NAD83

Soil Map Unit Name: FIDDYMENT-KASEBERG LOAM NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. N/A			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5FT)			
1. FESTUCA BROMOIDES	30%	YES	FACU
2. TRIFOLIUM DUBIUM	20%	YES	UPL
3. TRIFOLIUM HIRTUM	15%		NL
4. VICIA VILLOSA	10%		NL
5. HOLOCARPHA VIRGATA	10%		FAC
6. LATHYRUS HIRSUTUS	15%		FAC
7. BRIZA MINOR	10%		FAC
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ___ Dominance Test is >50%
- ___ Prevalence Index is ≤3.0[1]
- ___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: SP-37

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR3/4	50%					LS	MIXED
	7.5YR4/6	30%						
	7.5YR3/3	20%						
12-16	7.5YR5/2	85%	7.5YR4/4	15%	C	M	SC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-38

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): NONE Slope (%): 2%

Subregion (LRR): C Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks: ABOVE AVE SEASONAL PRECIPITATION

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. POLYPOGON MONSPELIENSIS	35%	YES	FACW
2. PLAGIOBOTHRYS STIPITATUS	30%	YES	FACW
3. GRATIOLA FOAB EBRACTEATA	5%	_____	OBL
4. VERONICA PEREGRINA	TR	_____	FAC
5. JUNCUS BUFONIUS	TR	_____	FACW
6.			
7.			
8.			
	70% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 30% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

SOIL

Sampling Point: SP-38

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-7.5	7.5YR 4/2	50%					SiCL	
	7.5YR 3/3	30%						
	5YR 4/3	20%						
7.5+2	7.5YR 4/1	100%					C	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

SOILS HIGHLY MIXED - REDOX? - VEGETATION AND HYDROLOGY INDICATE HYDRIC CONDITIONS

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

ALGAL MATTING

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: NW PARCEL City/County: PLACER CO. Sampling Date: 5/17/2017

Applicant/Owner: WPWMA State: CA Sampling Point: SP-39

Investigator(s): R. HUDDLESTON, V. LEIGHTON Section, Township, Range: 31 12N 06E

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): _____ Slope (%): <2%

Subregion (LRR): C Lat: _____ Long: _____ Datum: NAD83

Soil Map Unit Name: COMETA - FIDDYMENT COMPLEX NWI classification: NONE

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No X	

Remarks: ABOVE AVE SEASONAL RAINFALL

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. N/A			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: 5 FT)			
1. AVENA BARBATA	50%	YES	NL
2. ELYMUS CAPUT-MEDUSAE	35%	YES	NL
3. GERANIUM DISSECTUM	15%		NL
4. VICIA VILLOSA	TR		NL
5. BROMUS DIANDRUS	TR		NL
6.			
7.			
8.			
	100% = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. N/A			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0% % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species _____	x 1 =	_____
FACW species _____	x 2 =	_____
FAC species _____	x 3 =	_____
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: _____ (A)		_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks:

SOIL

Sampling Point: SP-39

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	7.5YR 4/3	80%					SL	
	7.5YR 4/2	15%						
	5YR 3/4	5%						
9-12	10YR 4/2	50%						
	7.5YR 3/3	50%						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix D
Plant Species Observed

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
LYCOPHYTES			
ISOETACEAE			
Isoetes orcuttii	Orcutt's quillwort	Native	OBL
FERNS			
MARSILEACEAE			
Pilularia americana	American pillwort	Native	OBL
GYMNOSPERMS			
PINACEAE			
Pinus radiata	Monterey pine	Native	NL
EUDICOTS			
ADOXACEAE			
Sambucus nigra ssp. *caerulea*	blue elderberry	Native	FACU
APIACEAE			
Eryngium castrense	Great Valley button-celery	Native	OBL
ASTERACEAE			
Achyrachaena mollis	blow wives	Native	FAC
Anthemis cotula	stinking chamomile	Naturalized	FACU
Baccharis pilularis	coyote brush	Native	NL
Carduus pycnocephalus	Italian thistle	Naturalized	NL
Centaurea solstitialis	yellow starthistle	Naturalized	NL
Centromadia fitchii	Fitch's tarweed	Native	FACU
Gnaphalium palustre	cudweed	Native	FACW
Holocarpha virgata	narrow tarplant	Native	NL
Hypochaeris glabra	smooth cat's ear	Naturalized	NL
Lactuca serriola	prickly lettuce	Naturalized	FACU
Lasthenia fremontii	Fremont's goldfields	Native	OBL
Lasthenia glaberrima	smooth goldfields	Native	OBL
Leontodon saxatilis ssp. *saxatilis*	hairy hawkbit	Naturalized	NL
Logfia gallica	narrowleaf cottonrose	Naturalized	NL
Matricaria discoidea	pineapple weed	Naturalized	FACU
Psilocarphus brevissimus	woolly marbles	Native	FACW

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
Senecio vulgaris	common groundsel	Naturalized	FACU
Silybum marinum	milk thistle	Naturalized	NL
Sonchus oleraceus	common sowthistle	Naturalized	UPL
BORAGINACEAE			
Amsinckia menziesii	common fiddleneck	Native	NL
Plagiobothrys bracteatus	vernal pool popcorn flower	Native	FACW
Plagiobothrys stipitatus	slender popcorn flower	Native	FACW
Plagiobothrys undulatus	wavy-stemmed popcorn flower	Native	OBL
BRASSICACEAE			
Draba verna	spring whitlow-grass	Naturalized	NL
Raphanus sativus	wild radish	Naturalized	NL
CAMPANULACEAE			
Downingia bicornuta	two-horned downingia	Native	OBL
Downingia ornatissima	folded downingia	Native	OBL
Downingia pusilla	dwarf downingia	Native (CRPR 2B.2)	OBL
CARYOPHYLLACEAE			
Cerastium glomeratum	mouse-ear chickweed	Naturalized	UPL
Silene gallica	windmill pink	Naturalized	NL
Spergularia rubra	red sandspurry	Naturalized	FAC
CONVOLVULACEAE			
Convolvulus arvensis	bindweed	Naturalized	NL
CRASSULACEAE			
Crassula aquatica	Water pygmyweed	Native	OBL
Crassula connata	pygmyweed	Native	FAC
EUPHORBIACEAE			
Croton setiger	dove weed	Native	NL
Euphorbia maculata	spotted spurge	Naturalized	UPL
FABACEAE			
Lathyrus hirsutus	Caley pea	Naturalized	FAC
Lupinus bicolor	miniature lupine	Native	NL
Medicago sativa	alfalfa	Naturalized	UPL
Trifolium dubium	little hop clover	Naturalized	UPL

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
Trifolium fragiferum	strawberry clover	Naturalized	FAC
Trifolium glomeratum	clustered clover	Naturalized	NL
Trifolium hirtum	rose clover	Naturalized	NL
Trifolium incarnatum	crimson clover	Naturalized	NL
Trifolium repens	white clover	Naturalized	FACU
Trifolium subterraneum	subterranean clover	Naturalized	NL
Trifolium variegatum	whitetip clover	Native	FAC
Vicia sativa	spring vetch	Naturalized	FACU
Vicia villosa ssp. *varia*	winter vetch	Native	NL
Vicia villosa ssp. *villosa*	hairy vetch	Naturalized	NL
FAGACEAE			
Quercus douglasii	blue oak	Native	NL
Quercus lobata	valley oak	Native	NL
GENTIANACEAE			
Cicendia quadrangularis	Oregon timwort	Native	FAC
GERANIACEAE			
Erodium botrys	Stork's bill filaree	Naturalized	FACU
Erodium moschatum	white-stem filaree	Naturalized	NL
Geranium dissectum	cut-leaf geranium	Naturalized	NL
Geranium molle	dove's-foot geranium	Naturalized	NL
LAMIACEAE			
Trichostema lanceolatum	vinegar weed	Native	FACU
LYTHRACEAE			
Lythrum hyssopifolia	hyssop loosestrife	Naturalized	NL
MALVACEAE			
Malva parviflora	cheeseweed	Naturalized	NL
MONTIACEAE			
Calandrinia menziesii	red maids	Native	NL
Claytonia perfoliata	miner's lettuce	Native	FAC
Montia fontana	water chickweed	Native	OBL
MYRSINACEAE			
Lysimachia arvensis	scarlet pimpernel	Naturalized	FAC

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
Lysimachia minima	chaffweed	Native	FACW
MYRTACEAE			
Eucalyptus sp.	eucalyptus	Naturalized	-
ONAGRACEAE			
Epilobium densiflorum	dense boisduvalia	Native	FACW
OROBANCHACEAE			
Castilleja attenuata	valley tassels	Native	NL
Parentucellia viscosa	yellow glandweed	Naturalized	FAC
Triphysaria eriantha	Johnnytuck	Native	NL
PHRYMACEAE			
Mimulus guttatus	common monkeyflower	Native	OBL
Mimulus tricolor	tricolor monkeyflower	Native	OBL
PLANTAGINACEAE			
Callitriche marginata	winged water-starwort	Native	OBL
Gratiola ebracteata	bractless hedgehyssop	Native	OBL
Plantago coronopus	buckhorn plantain	Naturalized	FAC
Veronica peregrina ssp. *xalapensis*	purslane speedwell	Native	FAC
POLEMONIACEAE			
Navarretia intertexta	needle-leaf pincushion-plant	Native	FACW
POLYGONACEAE			
Polygonum aviculare ssp. *depressum*	common knotweed	Naturalized	FAC
Rumex crispus	curly dock	Naturalized	FAC
Rumex pulcher	fiddle dock	Naturalized	FAC
RANUNCULACEAE			
Ranunculus bonariensis var. *trisepalus*	vernal pool buttercup	Native	OBL
RHAMNACEAE			
Frangula californica	California coffeeberry	Native	NL
ROSEACEAE			
Rosa californica	California wild rose	Native	NL
RUBIACEAE			
Galium aparine	goose grass	Native	FACU
Galium parisiense	wall bedstraw	Naturalized	NL

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
SALICACEAE			
Populus fremontii	Fremont cottonweed	Native	NL
Salix exigua	narrow-leaf willow	Native	FACW
Salix gooddingii	black willow	Native	FACW
ZYGOPHYLLACEAE			
Tribulus terrestris	puncture vine	Naturalized	NL
MONOCOTS			
CYPERACEAE			
Cyperus eragrostis	tall flatsedge	Native	FACW
Eleocharis macrostachya	creeping spine rush	Native	NL
JUNCACEAE			
Juncus bufonius var. *bufonius*	toad rush	Native	FACW
Juncus bufonius var. *occidentalis*	western toad rush	Native	FACW
Juncus capitatus	dwarf rush	Native	FACU
Juncus oxymeris	pointed rush	Native	FACW
JUNCAGINACEAE			
Triglochin scilloides	flowering quillwort	Native	OBL
POACEAE			
Alopecurus saccatus	Pacific foxtail	Native	OBL
Avena fatua	wild oat	Naturalized	NL
Briza minor	small quaking grass	Naturalized	FAC
Bromus diandrus	rip-gut brome	Naturalized	NL
Bromus hordeaceus	soft chess	Naturalized	FACU
Cynodon dactylon	Bermuda grass	Naturalized	FACU
Deschampsia danthonioides	annual hairgrass	Native	FACW
Elymus caput-medusae	Medusa head	Naturalized	NL
Festuca bromoides	brome fescue	Naturalized	NL
Festuca microstachys	Pacific fescue	Native	NL
Festuca perennis	Italian rye grass	Naturalized	NL
Glyceria x occidentalis	western manna grass	Naturalized	OBL
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	Naturalized	FAC
Hordeum murinum ssp. *leporinum*	hare barley	Naturalized	FACU

Table D-1. Plant Species Observed in the WPWMA Project Area, May and June 2017

Scientific Name	Common Name	Status	Wetland Indicator Status
Phalaris lemmonii	Lemmon's canarygrass	Native	FACW
Phalaris paradoxa	hood canarygrass	Naturalized	FAC
Poa annua	annual bluegrass	Naturalized	FAC
Polypogon monspeliensis	rabbitsfoot grass	Naturalized	FACW
THEMIDACEAE			
Dichelostemma capitatum	blue dicks	Native	FACU
Dichelostemma congestum	Ookow	Native	NL
Triteleia hyacinthina	white brodiaea	Native	FAC
Triteleia laxa	Ithuriel's spear	Native	NL

Notes:

FAC = Facultative

FACU = Facultative upland

FACW = Facultative wet

NL = Not listed

OBL = Obligate

UPL = Upland

Taxonomic nomenclature follows the *Jepson On-Line Interchange for California Floristics* (University of California, Berkeley, 2017).

Wetland indicator status follows the *National Wetland Plant List* (Lichvar, R. W., D. L. Banks, W. N. Kirchner, and N. C. Melvin. 2016. "The National Wetland Plant List: 2016 Wetland Ratings." *Phytoneuron*. 2016-30. pp. 1-17).

Appendix 2D
Cultural Resources Technical Memorandum

Cultural Resources Desktop Literature Review for the Western Placer Waste Management Authority Master Planning Project, Placer County, California

PREPARED FOR:	Western Placer Waste Management Authority
COPY TO:	Project File Doug Brown/Douglas Environmental
PREPARED BY:	Gloriella Cardenas/CH2M
DATE:	January 30, 2018

Introduction

This technical memorandum summarizes the findings from the cultural resources desktop literature review performed in August 2017 for the Western Placer Waste Management Authority (WPWMA) Master Planning Project (project) in Placer County, California. The review was performed by CH2M HILL Engineers, Inc. (CH2M) archaeologist Gloriella Cardenas, who meets the qualifications for Archaeological Principal Investigator in the Secretary of the Interior's Professional Qualification Standards. WPWMA proposes to expand their existing operations at the Western Regional Sanitary Landfill and Materials Recovery Facility (MRF) near Roseville, California. The purpose of this high-level desktop screening was to assess the general project sensitivity for potential impacts to cultural resources on the WPWMA's properties, such as known sites of historical importance, and to identify areas that may require additional study.

Project Description and Area of Potential Effects

WPWMA's Active Facility (landfill, compost facility, MRF, and ancillary operations) is located at 3033 Fiddyment Road, Roseville, California 95747. Operation of the Active Facility is conducted on 314 acres. In addition, the WPWMA owns adjacent properties east (155 acres) and west (459 acres) of the Active Facility, for a total area of potential effects (APE) of 928 acres. Figure 1, on the following page, shows the relative location and size of the Active Facility and the two WPWMA (east and west) properties adjacent to the Active Facility. Fiddyment Road runs between the Active Facility and the western property. Athens Avenue borders the northern portion of the Active Facility.

The WPWMA is in the process of developing a master plan to define new facility modifications, enhancements, and development projects for the WPWMA Active Facility. The WPWMA has determined it is critical to modify, upgrade, and expand its current facility to have sufficient future operational capacity. Enhancements are also necessary to comply with upcoming regulatory changes that will have a significant impact on both the WPWMA and its participating agencies (Lincoln, Rocklin, Roseville, Placer County, Auburn, Loomis, and Colfax).

Defining Cultural Resources

In evaluating a project's potential to adversely affect cultural resources, the analysis focuses on whether impacts will occur on historical resources or unique archaeological resources. Historical resources or properties are those listed on or eligible for listing in the National Register of Historic Places (NRHP) [36 *Code of Federal Regulations* (CFR) 800.16(l)(1)]. A property may be listed in the NRHP if it meets any of the criteria provided in the NRHP regulations (36 CFR 60.4) and retains integrity. Typically, properties must also be 50 years old or older [36 CFR 60.4(d)].

Figure 1. Project Site and Adjacent Properties

Determining the NRHP eligibility of a site or district is guided by the specific legal context of the site's significance as set out in 36 CFR Part 60.4 (see below). The National Historic Preservation Act authorizes the Secretary of the Interior to maintain and expand a national register (the NRHP) of districts, sites, buildings, structures, and objects of significance in American history, architecture, archaeology, engineering, and culture. A property may be eligible for listing in the NRHP if it meets the criteria for evaluation defined in 36 CFR 60.4, as follows:

> *The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:*
>
> – *Are associated with events that have made a significant contribution to the broad patterns of our history;*
>
> – *Are associated with the lives of persons significant in our past;*
>
> – *Embody the distinctive characteristics of a type, period, or method of construction, or represent the work of a master, or possess artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction; and*
>
> – *Have yielded, or may be likely to yield, information important in prehistory or history.*

The California Environmental Quality Act (CEQA) offers directives regarding impacts on historical resources and unique archaeological resources. The State CEQA Guidelines define a "historical resource" to include more than one category of resources. The first category is "resource(s) listed or eligible for listing on the

California Register of Historical Resources (CRHR)." (*California Code of Regulations* [CCR] Section 15064.5[a][1]; see also Public Resources Code Sections 5024.1 and 21084.1.) A historical resource may be eligible for inclusion in the CRHR, as determined by the State Historical Resources Commission or the lead agency, if the resource:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage; or
2. Is associated with the lives of persons important in our past; or
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, a resource is presumed to constitute a "historical resource" if it is included in a "local register of historical resources" unless "the preponderance of evidence demonstrates that it is not historically or culturally significant." (CCR Section 15064.5[a][2])

CEQA and the State CEQA Guidelines also require consideration of unique archaeological sites (Public Resources Code Section 21083.2, 14 CCR Section 15064.5). A "unique archaeological resource" is defined in CEQA (Public Resources Code Section 21083.2[g]) as:

> *"…an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:*
>
> *(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.*
>
> *(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.*
>
> *(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person."*

Literature Search

CH2M conducted a cultural resources-focused literature review for the 928-acre APE located in Roseville, California, using a U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map for Township 12N, Range 6E, Sections 5, 6, and 31, plus a 1-mile buffer. A map of this study area is provided in the attachment to this technical memorandum. CH2M coordinated with the California Historical Resources Information System (CHRIS), North Central Information Center (NCIC), located at California State University, Sacramento, to conduct a literature search for this study area.

In addition to the archaeological site location maps maintained at the NCIC, the following sources were examined:

- NRHP
- State and local listings for the presence of historic buildings, structures, landmarks, points of historical interest, or other cultural resources
- Historical maps
- Archaeological sites (historic and prehistoric)
- Previous investigations of the study area

Results

CH2M's review of the literature search results for the study area revealed one previously recorded cultural resource within the APE, in addition to thirteen cultural resource sites and seven isolates within a 1-mile radius of the APE (NCIC, 2017). Table 1 contains a summary of the cultural sites within the study area (including the APE and the 1-mile radius) with the evaluation recommendations made by the investigator.

Isolates are defined as fewer than three artifacts in a location that is not associated with an archaeological site. The seven isolates within a 1-mile radius of the project are not included in Table 1 because by definition, isolates lack immediate cultural context and therefore lack the data potential required to be considered eligible for the NRHP or CRHR; no further examination of isolates is required.

Table 1. Cultural Sites within the Study Area

Sites within the Area of Potential Effects			
Site Number	**Site Type**	**Site Description**	**Evaluation CRHR/ NRHP Year**
P-31-001422	Historic	Fiddyment Road	Not eligible/2004 and 2015
Sites within 1-Mile Radius of the Area of Potential Effects			
Site Number	**Site Type**	**Site Description**	**Evaluation CRHR/ NRHP Year**
P-31-000016	Multicomponent	Homestead/lithic scatter	Not evaluated
P-31-000017	Historic	Stone alignments	Not evaluated
P-31-001250	Historic	Refuse deposit	Not evaluated
P-31-001405	Historic	Homestead	Not evaluated
P-31-001424	Prehistoric	Lithic scatter	Not evaluated
P-31-001702	Historic	Ranch	Not eligible/1997
P-31-001705	Historic	Ranch Complex	Not eligible/1999
P-31-005846	Historic	Homestead	Not evaluated
P-31-005847	Historic	Homesite	Not evaluated
P-31-005849	Historic	Fences, water conveyance	Not eligible/2015
P-31-005850	Historic	Homesite	Not evaluated
P-31-005851	Historic	Fences, water conveyance	Not eligible/2015
P-31-005854	Historic	Well	Not evaluated

Source: CHRIS NCIC, 2017.

As shown in Table 1, only one site, P-31-001422, was located within the APE. P-31-001422 is identified as the historic Fiddyment Road. It was evaluated by Pappas and Webb of ECORP in 2015 and found not eligible for listing in the NRHP, concurring with the first evaluation of ineligibility in 2004 by JRP Historical Consulting. No further evaluation of this resource is recommended.

Thirteen sites are documented within the 1-mile buffer (Table 1). Four have received evaluation recommendations of "not eligible" to the CRHR/NRHP by the recording investigators; the other nine sites were not evaluated by the investigator at the time of recordation. No ground-disturbing activities will be

conducted outside of the 928-acre APE and therefore no impacts to these sites are expected. No further work or evaluations are recommended.

Eight cultural resources studies have been conducted of segments within the APE, resulting in approximately 40 percent (370 acres) of the project area having been subject to previous cultural resources investigations. These studies were conducted between 1981 and 2008.

Review of historic maps, specifically the General Land Office Plat Map (USGS, 1855), revealed that the project region had been geologically surveyed and sectioned, and contained agricultural fields, homesites, roads, and waterways, all of which were mapped by 1855.

Summary and Clearance

The NCIC search resulted in the identification of one historic period road within the APE, evaluated as not eligible for listing in the NRHP or CRHR; thirteen sites within the study area 1-mile buffer, none of which have been evaluated as eligible for listing in the NRHP or CRHR; and no historic properties in all of the study area.

The potential for historic period resources is moderate due to long-term agricultural use of the area (USGS, 1855); there is a potential for historic roads, farming features, and like elements of the historic period to be present. The potential for prehistoric/archaeological resources is low because the APE has been subject to agricultural and solid waste facility uses.

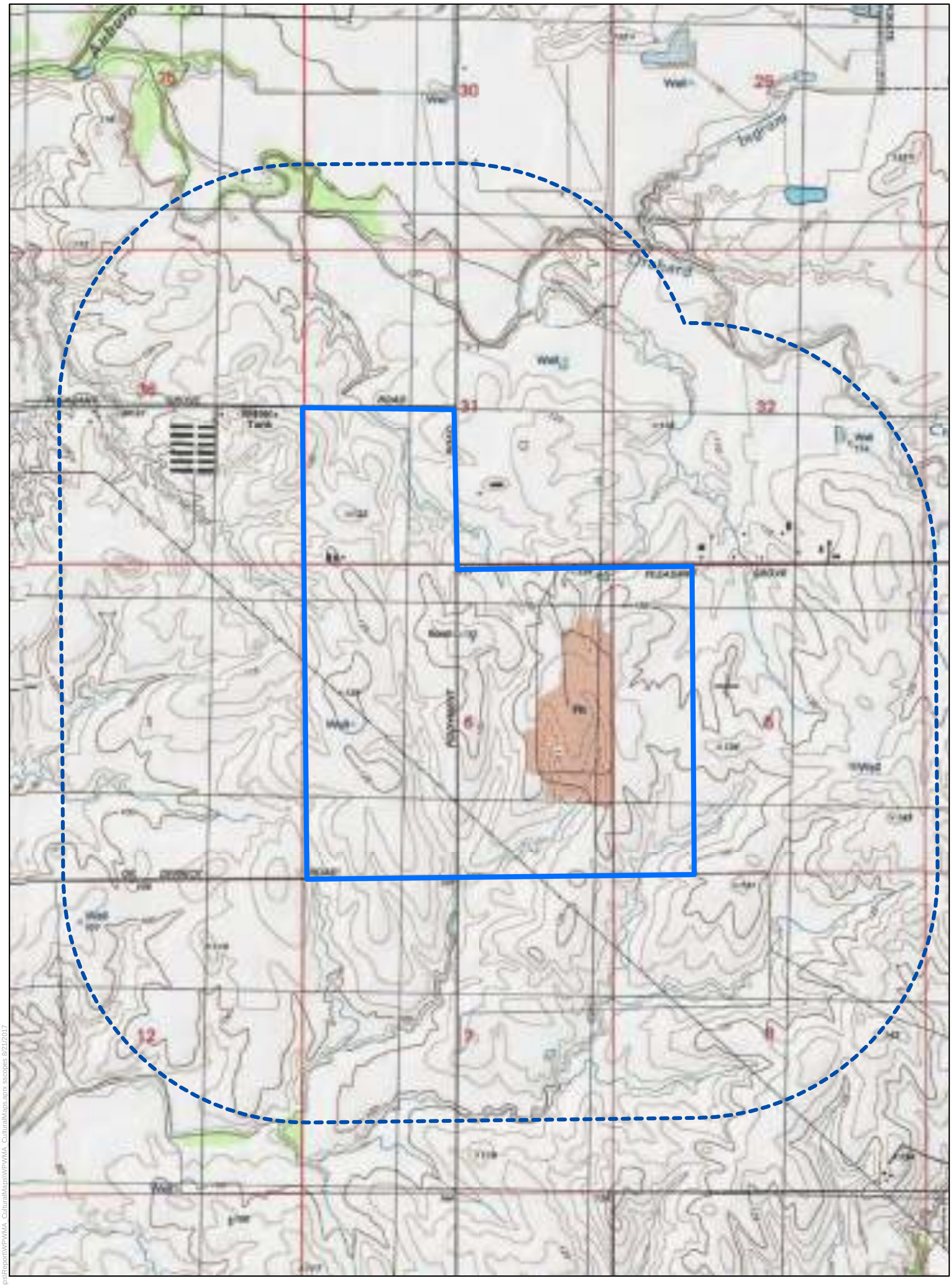
Because a large portion of the APE has not been subject to pedestrian survey, and the sections that have been studied were done so outside of the permissible investigation period (all but one study was conducted over 10 years ago), per California State Historic Preservation guidelines, it is recommended that a cultural resources pedestrian survey be conducted during preparation of the Master Plan's Environmental Impact Report.

References

California Historical Resources Information System North Central Information Center (CHRIS NCIC). 2017. Literature Search Results SAC-17-127. On file with CH2M, Santa Ana, California.

U.S. Geological Survey (USGS). 1855. Township 12 N, 6E, Mount Diablo Meridian, GLO Plat Map. On file with CH2M, Santa Ana, California.

Attachment
Area of Potential Effects Map



Legend

- Western Placer WWTP Project
- 1-mile Buffer of WPWMA Location

USGS Quad: ROSEVILLE
Township 12N, Range 6E, S29, 30, 31, 32
Township 12N, Range 5E, S25, 36
Township 11N, Range 5E, S01+12
Township 11N, Range 6E, S05, 06, 07, 08

N

0 200 400
Feet

1:24,000

ATTACHMENT
Area of Potential Effects Map
Cultural Resources Desktop Literature Review
WPWMA Master Planning Project, Placer County, California

ch2m:

\\Brookside\GIS_SHARE\ENRG\00_Proj\WWPWMA\Maps\Report\WPWMA_CulturalMaps\WPWMA_CulturalMaps.aprx sscopes 8/21/2017

Appendix 2E
Geotechnical Evaluation

REPORT

Geotechnical Exploration Report

Proposed Expansion of Western Regional Sanitary Landfill

Submitted to:

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Auburn, California 95833

Submitted by:

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Project No. 1649494

August 2018

Distribution List

Jacobs

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1.0 INTRODUCTION

The Western Placer Waste Management Authority (WPWMA) owns the Western Regional Sanitary Landfill (WRSL). Solid waste management activities at WRSL include a public drop-off area, materials recovery facility, construction and demolition debris processing facility, composting facility, and landfill.

In recognition of the projected growth of the WPWMA's service area, recent laws requiring increased waste diversion, and constraints related to the size of WPWMA's existing facilities, the WPWMA is considering expanding its facilities. One expansion element being considered is a lateral expansion of the existing landfill to the east, to the property owned by the WPWMA (the Site). Expanding to the east would allow a contiguous landfill and avoid a valley between the existing landfill and the expansion area; thereby providing increased disposal capacity. The landfill expansion would also provide disposal capacity for waste relocated from the Pre-Title D unlined modules of the existing landfill (Modules 1, 2, 10, and 11) to minimize long-term environmental risk and the opportunity to expand non-landfill solid waste management activities adjacent to their existing locations.

The WPWMA-owned property to the east of the existing landfill is approximately 178 acres. The property has been used for cattle grazing and no field exploration of the property has occurred. In order to provide information for design and to support an environmental impact report, Golder Associates Inc. (Golder) conducted a field exploration program consistent with the scope of work contained in its proposal, dated November 10, 2016.

2.0 FIELD EXPLORATION

Golder advanced geotechnical borings at the Site on September 11 through September 16, 2017 to infer stratigraphy and characteristics of the existing subsurface materials. A total of five (5) borings (designated BG-1, BG-2, BG-3, PZ-1, and PZ-2) were drilled using a CME-95 truck mounted hollow stem auger rig to final depths ranging from approximately 92 to 111.5 feet below ground surface (bgs). The locations of the boreholes are shown in Figure 1. The borings were drilled by Cascade Drilling of Sacramento, California, under subcontract to Golder.

Prior to the field exploration, the boring locations were cleared of underground utilities through Underground Service Alert (USA). Golder obtained the necessary boring permits through the Placer County Department of Environmental Health. All five boreholes were used as exploratory borings for geotechnical subsurface characterization, and borings PZ-1 and PZ-2 were used to install piezometers for future use measuring depth to groundwater.

Soil samples were primarily obtained using a standard penetration test (SPT) split-spoon sampler every 5 feet for the first 50 vertical feet, and every 10 feet thereafter. The split-spoon sampler consists of a 2.0-inch outside diameter, 1.4-inch inside diameter split barrel driven a total of 18 inches (or to refusal) into the soil at the bottom of the boring using an automatic 140-pound hammer falling a vertical distance of 30 inches. The number of hammer blows required to drive the sampler the final 12 inches is considered the SPT "N" value, which provides a measure of the relative density of granular soils and relative stiffness of cohesive soils. Refusal of the sampler was considered to be achieved when it took 50 hammer blows to advance the sampler 6 inches or less. The procedures employed in the field were generally consistent with those described in ASTM D1586.

Soil collected inside the split barrel sampler was visually classified in the field, placed in sealed plastic bags, and stored for future reference and laboratory testing. Bulk disturbed soil samples were also collected from the auger

cuttings at various depths, placed in sealed 5-gallon buckets, and stored for laboratory testing. The following bulk samples were collected:

Boring	Depth (ft)	Soil Type
BG-1	25 - 40	clayey silt (3 buckets)
	50 - 60	silty clay
BG-2	20 - 25	clay
BG-3	5 - 10	sand
	10.5 - 15	clay
	20 - 25	sand
	40.5 - 45	sand
PZ-1	11 - 15	sand
	15 - 30	silty clay (3 buckets)
PZ-2	40 - 45	silty sand to clayey sand

Upon reaching termination depth, borings BG-1 through BG-3 were filled completely with cement grout to the ground surface using the rig augers as a tremie pipe. Borings PZ-1 and PZ-2 were used to construct piezometers.

The logs for the borings are presented in Appendix A. The logs (Report of Borehole) describe the earth materials encountered and the samples obtained. The logs also show the boring number, drilling date, and the name of the Golder geologist that logged the boring. The soils were described in general accordance with ASTM D2487 (i.e., the Unified Soil Classification System). The boundaries between different soil types shown on the logs are approximate, as the actual transition between layers may be more gradual.

3.0 LABORATORY TESTING

3.1 Testing of Bag Samples

Selected bag samples collected from the test borings were tested in Golder's geotechnical testing laboratory located in Atlanta, Georgia to verify the field classification. The following index tests were performed on selected samples:

- Natural moisture content (16 samples)
- Grain-size analysis (16 samples)
- Atterberg limits (10 samples)

The laboratory test results for the bag samples are presented in Appendix B. The results are summarized in Table 1.

As can be seen in Table 1, the coarser-grained soils classify as sand, silt, or a mix of sand and silt (SM). The finer-grained soils range from low-plasticity clayey sand (SC) to silty clay (CL) with the plasticity index (PI) ranging from 5 to 19.

3.2 Testing of Bulk Samples

Selected clayey bulk samples of the drill cutting were tested in the laboratory to further characterize the encountered soils. The following index tests were performed on selected samples:

- Natural moisture content (9 samples)
- Grain-size analysis (9 samples)
- Atterberg limits (9 samples)
- Modified Proctor (9 samples)
- Saturated hydraulic conductivity/permeability (5 samples)

The above tests were performed mainly to assess the suitability of the clayey soils for landfill liner. The laboratory test results for the bulk samples are presented in Appendix C. The results are summarized in Table 2.

As can be seen from Table 2, the clayey soils tested had a PI of between 4 and 21 suggesting low plasticity. The maximum dry density from the modified Proctor tests (ASTM D1557) ranged from 108.6 to 127 pounds per cubic feet (pcf), and the optimum moisture content ranged from 10 to 17.8 percent.

The hydraulic conductivity tests were performed on test specimens recompacted to approximately 90 percent dry density and approximately 2 percent wet of optimum from the modified Proctor tests. The saturated hydraulic conductivity ranged from 4.7×10^{-8} to 2.6×10^{-7} centimeters/second (cm/s).

3.3 Interface Shear Strength Testing

Two large-scale direct shear tests were performed using two bulk clayey soil samples (PZ-1 and BG-1) to estimate the interface shear strength between the clayey soils and a shear-reinforced geosynthetic clay liner (GCL). The interface shear strength is important for the slope stability of the landfill. This interface shear strength testing was performed by SGI Testing Services, LLC, Atlanta, Georgia using readily available samples of Bentomat DN GCL manufactured by CETCO. The ASTM D6243 test procedure was used. Both tests were performed by remolding the clay at a moisture content of 3% wet of optimum and compacting the clay to 88 percent compaction relative to the maximum modified Proctor dry density.

The result of the interface shear strength test is presented Appendix D. The results show a large displacement shear strength envelope (corresponding to 3-inch shear displacement) defined the following adhesion (a) and friction angle (δ):

- Test 1 (using bulk sample from PZ-1): a=845 psf, δ=19 degrees
- Test 2 (using bulk sample from BG-1): a=835 psf, δ=20 degrees

4.0 SITE GEOLOGY AND SUBSURFACE CONDITIONS

4.1 Site Conditions

4.1.1 Location

The proposed expansion area is bounded to the west by the existing landfill, to the north by Athens Avenue, and to the east and south by undeveloped land. Ground cover consists mostly of topsoil and grass. Land uses in the general vicinity consist of cattle grazing, agriculture, and light industry.

4.1.2 Topography

The current topography of the expansion area is generally flat with a slight slope to the southeast. The center of the expansion area is located at approximately 130 feet above mean sea level (amsl).

4.1.3 Surface Water

Surface water generally drains to adjacent properties or infiltrates into the ground. Several vernal pools, swales, and seasonal wetlands have been mapped on the Site.

4.1.4 Groundwater

First encountered groundwater measured in nearby wells at the existing landfill varies from approximately 70 to 110 feet below the native ground surface. The groundwater gradient at the landfill is approximately 0.002 foot per foot and flows primarily toward the southwest.

4.2 Site Geology

The Site is located in the northeastern portion of the Great Central Valley geomorphic province. The Great Valley is an alluvial plain about 50 miles wide and 400 miles long in the central part of California. The Great Valley is a trough in which sediments have been deposited since the Jurassic period (approximately 160 million years ago). The local geology consists of Quaternary-aged (up to 2.6 million years ago) alluvial deposits of terrestrial origin underlain by sandstone, shale, and gravel deposits of primarily Pleistocene to Pliocene age (0.01 to 5.3 million years ago) with some deposits as old as Miocene (up to 23 million years ago). Bedrock was not encountered in any of the borings during the field exploration.

4.3 Subsurface conditions

The specific subsurface conditions encountered at the Site during the field exploration are presented in the boring logs (Appendix A). In all the borings, the first 5 feet of material encountered was a sandy clay of low plasticity. In general, the materials encountered after the first 5 feet consisted of sand, silt, and clay mixtures. Most of the soil encountered after 50 feet was fine-grained and consisted of clayey sand and sandy clay. No bedrock was encountered in any of the borings.

5.0 CONCLUSIONS AND RECOMMENDTAIONS

Based on the results of the field exploration and laboratory testing, we conclude that:

- The proposed site for the lateral expansion of WRSL, located to the east of the existing landfill, is suitable from geotechnical considerations.
- Selected clayey soils underlying the site will be suitable for the construction for base liner after proper moisture conditioning and adequate compaction.

- The measured clay/GCL interface shear strengths are within the upper range of typical values encountered by Golder on other past projects.

Golder recommends the following exploration and analyses during the design of the individual modules of the landfill expansion:

- Geotechnical test borings and laboratory tests
- Analysis of the stability of excavation slopes and settlement of the landfill subgrade
- Updated seismic hazard analysis for the site
- Static and seismic slope stability of waste slopes to estimate the minimum base liner shear strengths required
- Settlement analysis for the landfill subgrade to evaluate its impact on the leachate collection and removal system, and determine the minimum landfill subgrade slopes
- Shear strength testing of the proposed base liner components

Signature Page

Golder Associates Inc.

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Senior Consultant

Richard D. Haughey, P.E.
Associate / Practice Leader

NK/RDH

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GOLDER

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Tables

Table 1
Summary of Laboratory Test Results - Bag Samples

Sample Identification	Sample Type	Sample Depth	Soil Classi-fication	Natural Moisture %	Atterberg Limits				Grain Size Distribution		
					L.L.	P.L.	P.I.	L.I.	% finer No.4 Sieve	% Finer No. 200 Sieve	% finer .005 mm
BG-1-5	Bag	5.0	(SM)	14.6	-	-	-	-	100.0	48.3	-
BG-1-20	Bag	20.0'	CL	25.8	36	22	14	0.28	100.0	80.3	-
BG-1-70	Bag	70.0'	(SM)	22.3	-	-	-	-	98.6	37.9	-
BG-2-5	Bag	5.0'	ML	23.8	39	26	13	-0.18	100.0	84.2	28.0
BG-2-15	Bag	15.0'	(SM)	23.8	-	-	-	-	100.0	12.3	-
BG-2-35	Bag	35.0'	ML	26.3	31	26	5	0.03	100.0	76.1	15.0
BG-2-50	Bag	50.0'	(SM)	19.7	-	-	-	-	99.9	42.8	-
BG-3-30	Bag	30.0'	CL	17.2	34	20	14	-0.21	99.6	60.7	27.5
BG-3-50	Bag	50.0'	(ML)	21.6	-	-	-	-	100.0	76.7	-
BG-3-70	Bag	70.0'	CL	14.0	37	21	16	-0.41	93.3	36.3	19.5
PZ-1-5	Bag	5.0'	ML	20.9	37	30	7	-1.40	99.9	85.3	19.0
PZ-1-40	Bag	40.0'	CL	19.7	43	24	19	-0.21	100.0	68.7	33.0
PZ-1-80	Bag	80.0'	(SC)	11.2	-	-	-	-	91.8	23.2	-
PZ-2-10	Bag	10.0'	CL	22.0	35	20	15	0.12	100.0	88.7	24.0
PZ-2-30	Bag	30.0'	ML	28.2	44	29	15	-0.03	100.0	78.1	25.0
PZ-2-60	Bag	60.0'	SC	18.2	30	20	10	-0.18	99.7	38.2	17.5

ABBREVIATIONS:

LIQUID LIMIT (LL), PLASTIC LIMIT (PL), PLASTICITY INDEX (Pl), LIQUIDITY INDEX (LI)
SILTY SAND (SM), SILTY CLAY (CL), SANDY SILT (ML), CLAYEY SAND (SC)

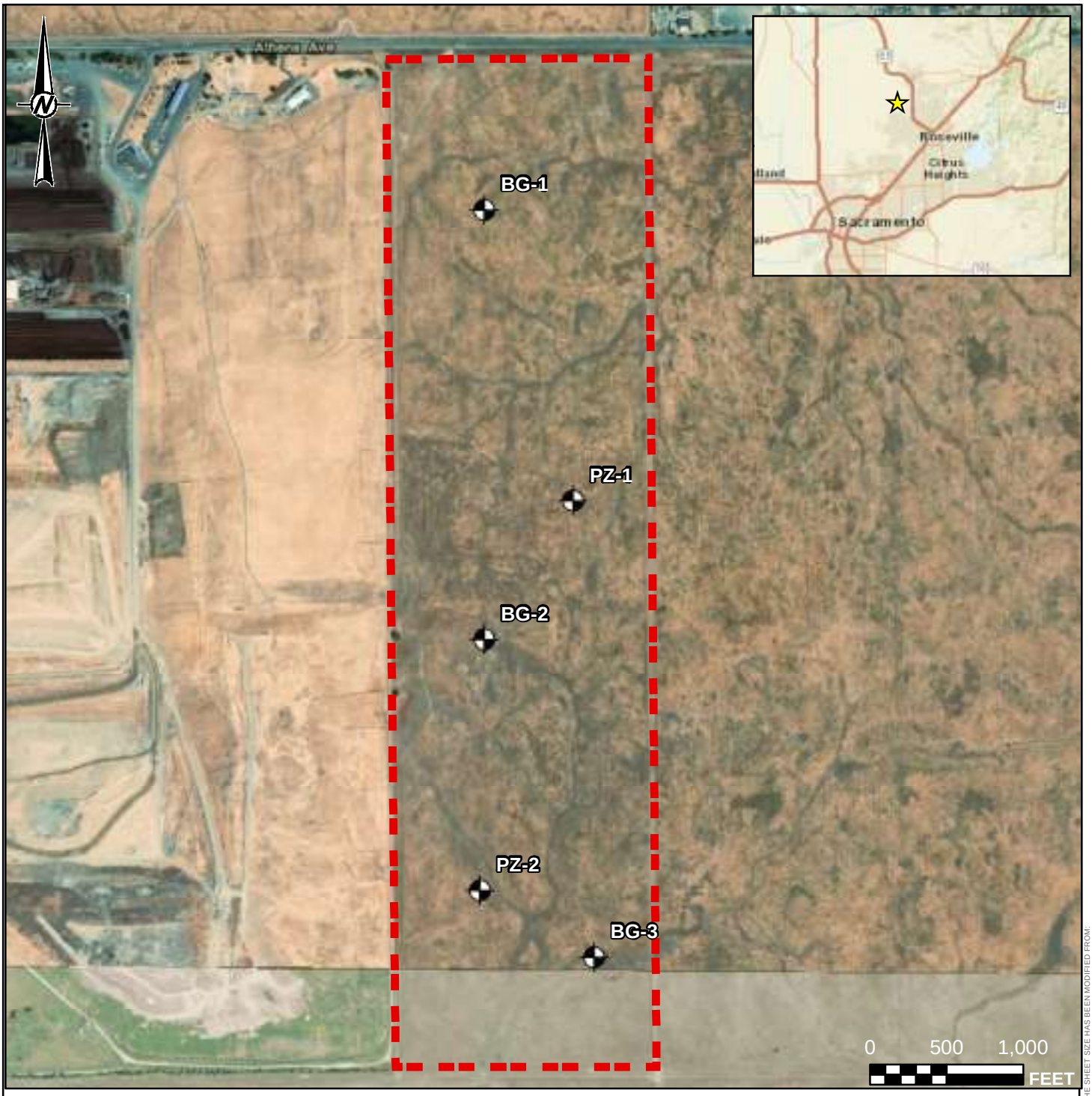
Table 2
Summary of Laboratory Test Results - Bulk Samples

Sample Identification	Sample Type	Sample Depth	Soil Classi-fication	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Unit Weight		Permeability (cm/sec)
					L.L.	P.L.	P.I.	L.I.	% Finer No.4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %	Moisture %	Dry (lb/cuft)	
BG-1	Bulk	25.0-40.0'	CL	20.9	41	20	21	0.02	100.0	76.3	44.0	109.5	16.2	18.1	98.8	1.5E-07
BG-1	Bulk	50.0-60.0'	CL	34.0	35	17	18	0.93	100.0	67.5	34.0	119.0	12.9	-	-	-
BG-2	Bulk	20.0-25.0'	CL	21.2	40	20	20	0.07	100.0	76.8	46.0	114.1	16.7	18.7	103.1	4.7E-08
BG-3	Bulk	5.0-10.0'	CL	24.6	43	23	20	0.06	100.0	84.9	48.5	108.6	17.8	20.5	97.4	1.6E-07
BG-3	Bulk	10.5-15.0'	CL	17.5	37	17	20	0.00	100.0	69.8	39.5	119.0	13.2	-	-	-
BG-3	Bulk	20.0-25.0'	SC	10.0	30	17	13	-0.53	100.0	49.7	30.0	126.8	10.3	-	-	-
PZ-1	Bulk	11.0-15.0'	SC-SM	6.9	19	15	4	-2.16	100.0	43.0	21.0	127.0	10.0	-	-	-
PZ-1	Bulk	15.0-30.0'	CL	28.2	41	21	20	0.35	100.0	85.2	42.6	113.3	17.0	18.3	102.8	5.0E-08
PZ-2	Bulk	40.0-45.0'	CL	25.3	43	22	21	0.15	100.0	78.2	53.7	115.0	15.9	17.8	103.3	2.6E-07

ABBREVIATIONS:

LIQUID LIMIT (LL), PLASTIC LIMIT (PL), PLASTICITY INDEX (Pl), LIQUIDITY INDEX (LI)
SILTY SAND (SM), SILTY CLAY (CL), CLAYEY SAND (SC)

Figures



LEGEND

BORING LOCATIONS

PROPOSED EXPANSION AREA

NOTES

SITE LOCATED AT APPROXIMATELY 3195 ATHENS AVENUE, LINCOLN, CA 95648.

REFERENCE

1. AERIAL IMAGERY OBTAINED FROM ESRI BASEMAP WEB SERVICE TITLED WORLD_IMAGERY. DATE OF IMAGERY: AUGUST 9, 2017.
2. KEY MAP BASEMAP OBTAINED FROM ESRI BASEMAP WEB SERVICES TITLED WORLD_STREET_MAP.

CLIENT
JACOBS
2485 NATOMAS PARK DRIVE, SUITE 600
SACRAMENTO, CA 95833

PROJECT
GEOTECHNICAL EXPLORATION REPORT
PROPOSED EXPANSION OF WESTERN REGIONAL SANITARY LANDFILL

TITLE
SITE PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2018-07-25
PREPARED	JHC
DESIGN	JHC
REVIEW	BS
APPROVED	RH

PROJECT 1649494 | Rev. 0 | FIGURE **1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 1 in

Path: M:\Sites\Western Regional LF\GIS\2018 Geotech Report\Figure 1.mxd

APPENDIX A

Test Borings Logs

RECORD OF BOREHOLE BG-1

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 11, 2017 11:30
DRILLING END: September 12, 2017 08:00
COORDINATES: Not Surveyed
SHEET: 1 of 2
GS ELEV.: 127.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0		0.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown; cohesive, w < PL	127.0	CL							
5		5.0	(SM), silty SAND, sand fine to medium grained, low plasticity fines; gray-brown; non-cohesive, dry to moist	122.0	SM		DO BG-1-5	5-6-6 12	11 / 18	12		
10		11.0	(ML), SILT, low plasticity fines, some sand fine to medium grained; light gray; cohesive, w < PL	116.0	ML		DO BG-1-10	3-7-11 18	15 / 18	18		
15		15.0	(SM), silty SAND, sand fine to medium grained, low plasticity fines; dark gray; non-cohesive, dry to moist	112.0	SM		DO BG-1-15	4-7-11 18	15 / 18	18		
20		20.0	(CL), CLAY, sand fine to medium grained, low plasticity fines; light gray-brown; cohesive, w < PL	107.0	CL		DO BG-1-20	6-9-15 24	17 / 18	24		
25	Hollow stem auger.	25.0	(ML), SILT WITH SAND, sand fine to medium grained, low plasticity fines; gray-brown; cohesive, w < PL	102.0	ML		DO BG-1-25	11-25-31 56	16 / 18	56		
30			Becomes light gray brown				DO BG-1-30	13-27-43 70	17 / 18	70		
35		35.0	(CL), sandy CLAY, sand fine to medium grained, low plasticity fines; light brown-gray; cohesive, w < PL	92.0	CL		AS		162			
40			Becomes reddish brown				DO BG-1-35	13-21-33 54	18 / 18	54		
45			Becomes gray				DO BG-1-40	12-27-41 68	14 / 18	68		
50							DO BG-1-45	12-27-34 61	17 / 18	61		
55							DO BG-1-50	18-22-33 55	17 / 18	55		
60		60.0	Log continued on next page	67.0			AS		102			

PENETRATION RESISTANCE BLOWS / ft: 20 40 60 80
WATER CONTENT (%): W_p W W_l 20 40 60 80

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE BG-1

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 11, 2017 11:30
DRILLING END: September 12, 2017 08:00
COORDINATES: Not Surveyed
SHEET: 2 of 2
GS ELEV.: 127.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
60	Hollow stem auger.	60.0	(SM), silty SAND, sand fine to coarse grained, subrounded to subangular, low plasticity fines; gray-brown; non-cohesive, moist	67.0	SM		DO BG-1-60	13-27-31 58	15 18	58		
65												
70			Becomes yellow brown				DO BG-1-70	15-34-37 71	16 18	71		
75												
80		80.0	(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; brown; cohesive, w < PL	47.0	CL		DO BG-1-80	12-20-33 53	18 18	53		
85												
90							DO BG-1-90	23-35-38 73	18 18	73		
95												
100			Becomes reddish brown									
		101.5		25.5			DO BG-1-100		18			
105			Bottom of borehole at 101.5 ft. (Target Depth) Backfilled with cement grout.									
110												
115												
120												

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE BG-2

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 12, 2017 11:15
DRILLING END: September 13, 2017 08:15
COORDINATES: Not Surveyed
SHEET: 1 of 2
GS ELEV.: 127.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft (20 40 60 80)	WATER CONTENT (%) (W_p W W_l) (20 40 60 80)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0	Hollow stem auger.	0.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown; cohesive, w < PL	127.0	CL								
5		5.0	(ML), SILT, sand fine to medium grained, low plasticity fines; light gray; cohesive, w < PL	122.0	ML		DO BG-2-5	12-8-14 22	15 / 18	22			
10			Becomes brown gray				DO BG-2-10	5-11-19 30	17 / 18	30			
15		15.5	(SM), silty SAND, sand fine to medium grained, low plasticity fines; light brown-gray to gray; non-cohesive, dry	111.5	SM		DO BG-2-15	6-12-16 28	16 / 18	28			
20		20.0	(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; light gray to gray; cohesive, w < PL	107.0	CL		DO BG-2-20	3-3-3 6	11 / 18	6			
25		25.0		102.0			AS BG-2-25		42				
30		30.0	(ML), sandy SILT, sand fine grained, low plasticity fines; brown-gray mottled red; cohesive, w < PL	97.0	ML		DO BG-2-25	18-50	9 / 11			100	
35		35.0	(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; gray; cohesive, w < PL Becomes gray mottled red	92.0	CL		DO BG-2-30	7-12-21 33	16 / 18	33			
40		41.0	(ML), SILT WITH SAND, sand fine to coarse grained, low plasticity fines; brown-gray mottled red; cohesive, w < PL	86.0	ML		DO BG-2-35	17-22-33 55	18 / 18	55			
45		45.0	(SM), silty SAND, sand fine to medium grained, low plasticity fines; brown-gray; non-cohesive, dry	82.0	SM		DO BG-2-40	11-20-27 47	16 / 18	47			
50		50.0	(CL), CLAY WITH SAND, sand fine grained, low plasticity fines; red-brown; cohesive, w < PL	77.0	CL		DO BG-2-45	10-18-30 48	16 / 18	48			
55			(SM), silty SAND, sand fine grained, non plastic fines; red-brown; non-cohesive, dry		SM		DO BG-2-50	12-17-22 39	15 / 18	39			
60		60.0		67.0									

Log continued on next page

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE BG-2

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 12, 2017 11:15
DRILLING END: September 13, 2017 08:15
COORDINATES: Not Surveyed
SHEET: 2 of 2
GS ELEV.: 127.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
60		60.0		67.0								
	Hollow stem auger.		(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; red-brown; cohesive, w < PL		CL		DO BG-2-60	12-24-47 71	18/18	71		
65												
70		70.0		57.0								
			(SC-SM), silty, clayey SAND, sand fine to coarse grained, subrounded to subangular, low plasticity fines; yellow-brown; non-cohesive, dry				DO BG-2-70	12-16-21 37	14/18	37		
75												
80					SC-SM		DO BG-2-80	18-24-31 55	14/18	55		
85												
90		90.0		37.0								
		92.0	(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; gray-brown; cohesive, w < PL	35.0	CL		DO BG-2-90	18-24-31 55	13/18	55		
			Bottom of borehole at 92.0 ft. (Refusal.) Backfilled with cement grout.									
95												
100												
105												
110												
115												
120												

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE BG-3

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 13, 2017 10:15
DRILLING END: September 14, 2017 09:50
COORDINATES: Not Surveyed
SHEET: 1 of 2
GS ELEV.: 114.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0	Hollow stem auger.	0.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown; cohesive, w < PL	114.0								
5			CLAY WITH SAND, sand fine to medium grained; gray				DO BG-3-5	6-14-20 34	17/18	34		
			Sandy CLAY, sand fine to medium grained; brown-gray		CL		AS		42			
10			(CL), CLAY, low plasticity fines; brown-gray; cohesive, w < PL				DO BG-3-10	6-7-8 15	15/18	15		
					CL		AS		42			
15							DO BG-3-15	7-9-11 20	13/18	20		
		16.0	(ML), sandy SILT, sand fine to medium grained, low plasticity fines; brown-gray; cohesive, w < PL	98.0	ML							
20		20.0	(SC), clayey SAND, sand fine to medium grained, low plasticity fines; brown; non-cohesive, dry	94.0			DO BG-3-20	10-19-31 50	11/18	50		
					SC		AS		42			
25		25.0		89.0								
			(CL), CLAY, low plasticity fines, some sand fine to medium grained; brown-gray mottled red; cohesive, w < PL				DO BG-3-25	14-24-33 57	17/18	57		
30			Sandy CLAY, sand fine to medium grained; light brown-gray				DO BG-3-30	12-21-26 47	17/18	47		
					CL							
35			CLAY WITH SAND, sand fine to medium grained; brown mottled red				DO BG-3-35	14-20-26 46	15/18	46		
40		40.5		73.5								
			(SC-SM), silty, clayey SAND, sand fine grained, low plasticity fines; red-brown; non-cohesive, dry to moist				DO BG-3-40	10-24-32 56	15/18	56		
					SC-SM		AS		42			
45		45.0		69.0								
			(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; brown-gray to light gray; cohesive, w < PL				DO BG-3-45	15-26-29 55	18/18	55		
					CL							
50		50.0		64.0								
			(ML), SILT, low plasticity fines; brown-gray to brown; non-cohesive, dry to moist				DO BG-3-50	10-21-32 53	18/18	53		
55					ML							
60		60.0		54.0								

Log continued on next page

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE BG-3

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 13, 2017 10:15
DRILLING END: September 14, 2017 09:50
COORDINATES: Not Surveyed
SHEET: 2 of 2
GS ELEV.: 114.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
60		60.0		54.0								
	Hollow stem auger.		(SC), clayey SAND, sand fine to coarse grained, subangular, low plasticity fines; light red-brown; non-cohesive, dry to moist		SC		DO BG-3-60	9-23-27 50	10 18	50		
65												
70		70.0		44.0			DO BG-3-70	23-50	10 11		100	
			(CL), CLAY, sand fine to coarse grained, subrounded to subangular, low plasticity fines, some gravel fine grained, subrounded to subangular; light red-brown; cohesive, w < PL		CL							
75												
80		80.0		34.0			DO BG-3-80	22-45-50 95	12 17		100	
			CLAY WITH SAND, sand fine to medium grained, low plasticity fines; dark brown to gray-brown; cohesive, w < PL									
85												
90			Becomes red brown				DO BG-3-90	17-24-31 55	15 18	55		
95												
100		101.5		12.5			DO BG-3-100	11-12-20 32	15 18	32		
			Bottom of borehole at 101.5 ft. (Target Depth) Backfilled with cement grout.									
105												
110												
115												
120												

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE PZ-1

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 15, 2017 11:30
DRILLING END: September 16, 2017 09:00
COORDINATES: Not Surveyed
SHEET: 1 of 2
GS ELEV.: 130.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0	Hollow stem auger.	0.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown; cohesive, w < PL	130.0	CL							
5		5.0	(ML), SILT, low plasticity fines, some sand fine to medium grained; gray; cohesive, w < PL	125.0	ML		DO PZ-1-5	7-14-18 32	17 18	32		
10		11.0	Becomes light gray	119.0			DO PZ-1-10	7-12-15 27	12 18	27		
			(SC-SM), silty, clayey SAND, sand fine to medium grained, low plasticity fines; light gray; non-cohesive, dry		SC-SM		AS		42			
15		15.0		115.0			DO PZ-1-15	7-15-16 31	18 18	31		
20			Becomes brown gray				DO PZ-1-20	6-12-16 28	18 18	28		
							AS		162			
25			CLAY WITH SAND; brown				DO PZ-1-25	10-12-16 28	18 18	28		
30			Becomes gray brown		CL		DO PZ-1-30	10-12-15 27	14 18	27		
35			Becomes light gray mottled red				DO PZ-1-35	8-14-22 36	17 18	36		
40			3-inch lens of grayish-brown fine to medium sand Sandy CLAY, sand fine to medium grained; light gray				DO PZ-1-40	12-14-17 31	18 18	31		
45		45.0		85.0			DO PZ-1-45	12-17-23 40	12 18	40		
			(SC), clayey SAND, sand fine to medium grained, low plasticity fines; brown; cohesive, w < PL		SC							
50		50.0		80.0			DO PZ-1-50	13-15-19 34	17 18	34		
55			(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown to brown; cohesive, w < PL		CL							
60												

Log continued on next page

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE PZ-1

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA

DRILLING START: September 15, 2017 11:30
DRILLING END: September 16, 2017 09:00
COORDINATES: Not Surveyed

SHEET: 2 of 2
GS ELEV.: 130.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586, 140 lb hammer, 30 inch drop, Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
60		60.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown to brown; cohesive, w < PL *(continued)*				DO PZ-1-60	50	5/5		100		
			CLAY WITH SAND, sand fine to medium grained; brown										
65													
70			Becomes gray		CL		DO PZ-1-70	22-26-32 58	13/18	58			
75													
80		80.0		50.0			DO PZ-1-80	44-25-28 53	15/18	53			
85	Hollow stem auger.		(SC), clayey SAND, sand fine to coarse grained, subrounded to subangular, low plasticity fines, some gravel fine grained; red-brown; non-cohesive, moist		SC								
90		90.0		40.0			DO PZ-1-90	15-18-32 50	11/18	50			
			(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; brown; cohesive, w < PL										
95			Becomes light gray									94: Hard drilling, taking a long time to drill.	
100			Becomes light brown		CL		DO PZ-1-100	16-22-28 50	10/18	50			
105													
110			Becomes brown				DO PZ-1-110	12-16-22 38	7/18	38			
		111.5		18.5									
			Bottom of borehole at 111.5 ft. (Target Depth) Completed as piezometer. Refer to diagram.										
115													
120													

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95

LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE PZ-2

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 14, 2017 11:50
DRILLING END: September 14, 2017 16:45
COORDINATES: Not Surveyed
SHEET: 1 of 2
GS ELEV.: 118.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft; WATER CONTENT (%)	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
0	Hollow stem auger.	0.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light brown; cohesive, w < PL	118.0	CL							
5		5.0	(SC), clayey SAND, sand fine to medium grained, low plasticity fines; light gray to light brown; cohesive, w < PL	113.0	SC		DO PZ-2-5	7-9-11 20	13/18	20		
10		10.0	(CL), CLAY, low plasticity fines, some sand fine to medium grained; light gray to gray; cohesive, w < PL	108.0			DO PZ-2-10	5-9-15 24	18/18	24		
15			Becomes brown gray mottled red				DO PZ-2-15	6-7-16 23	18/18	23		
20					CL		DO PZ-2-20	9-12-19 31	18/18	31		
25			CLAY WITH SAND, sand fine to medium grained; brown-gray mottled red				DO PZ-2-25	9-12-16 28	18/18	28		
30		30.0		88.0								
			(ML), SILT WITH SAND, sand fine to medium grained, low plasticity fines; brown-gray mottled red; cohesive, w < PL		ML		DO PZ-2-30	7-12-13 25	18/18	25		
35		35.0		83.0								
		36.0	(SC-SM), silty, clayey SAND, sand fine to coarse grained, subangular, low plasticity fines; brown; non-cohesive, moist	82.0	SC-SM		DO PZ-2-35	18-18-20 38	16/18	38		
40			(CL), CLAY WITH SAND, sand fine to medium grained, low plasticity fines; light gray-brown mottled red; cohesive, w < PL Becomes gray				DO PZ-2-40	12-22-26 48	17/18	48		
45							AS		42			
			Becomes light brown to light gray mottled red				DO PZ-2-45	9-15-27 42	17/18	42		
50			Becomes light brown		CL		DO PZ-2-50	13-20-23 43	17/18	43		
55												
60		60.0		58.0								

Log continued on next page

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

RECORD OF BOREHOLE PZ-2

PROJECT: WRSL Expansion Geotechnical Investigation
PROJECT NO.: 1649494
LOCATION: Lincoln, CA
DRILLING START: September 14, 2017 11:50
DRILLING END: September 14, 2017 16:45
COORDINATES: Not Surveyed
SHEET: 2 of 2
GS ELEV.: 118.0
TOC ELEV.: na
DATUM: WGS84

DEPTH (ft)	BORING METHOD	SOIL PROFILE: Depth	DESCRIPTION	SOIL PROFILE: Elev	USCS	GRAPHIC LOG	SAMPLES: SAMPLE TYPE & NUMBER	SAMPLES: BLOWS per 6 in (ASTM D1586 140 lb hammer 30 inch drop Automatic)	SAMPLES: REC / ATT (in)	PENETRATION RESISTANCE BLOWS / ft	NOTES WATER LEVELS	ADDITIONAL LAB TESTING
60	Hollow stem auger.	60.0	(SC), clayey SAND, sand fine to medium grained, low plasticity fines; red-brown; cohesive, w < PL	58.0	SC		DO PZ-2-60	12-18-24 42	16 18	42		
65												
70		70.0		48.0			DO PZ-2-70	17-21-34 55	15 18	55		
			(CL), sandy CLAY, sand fine to medium grained, low plasticity fines; brown; cohesive, w < PL									
75												
80			CLAY WITH SAND; light brown-gray				DO PZ-2-80	13-21-36 57	11 18	57		
85												
90			Becomes brown to dark brown		CL		DO PZ-2-90	13-27-31 58	18 18	58		
95												
100			Sandy CLAY, sand fine to medium grained; gray-brown				DO PZ-2-100	17-23-26 49	17 18	49		
105												
110			Becomes brown				DO PZ-2-110	21-26-32 58	15 18	58		
		111.5	Bottom of borehole at 111.5 ft. (Target Depth) Completed as piezometer. Refer to diagram.	6.5								
115												
120												

PENETRATION RESISTANCE BLOWS / ft: 20 40 60 80
WATER CONTENT (%): W_p — W — W_l; 20 40 60 80

DRILLING CO.: Cascade Drilling, L.P.
DRILLER: Tory Salazar
DRILL RIG: CME 95
LOGGED: J. Consoli
CHECKED: BS
REVIEWED: RH

Golder Associates

APPENDIX B

Laboratory Test Results - Bag Samples

CH2M/WPWMA PLANNING & PERMITTING/CA
SUMMARY OF SOIL DATA

Sample Identification	Sample Type	Sample Depth	Soil Classification	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
					L.L.	P.L.	P.I.	L.I.	% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %		Moisture %	Dry (lb/cuft)		
BG-1-5	Bag	5.0	(SM)	14.6	-	-	-	-	100.0	48.3	-	-	-	-	-	-	-	-
BG-1-20	Bag	20.0'	CL	25.8	36	22	14	0.28	100.0	80.3	-	-	-	-	-	-	-	-
BG-1-70	Bag	70.0'	(SM)	22.3	-	-	-	-	98.6	37.9	-	-	-	-	-	-	-	-
BG-2-5	Bag	5.0'	ML	23.8	39	26	13	-0.18	100.0	84.2	28.0	-	-	-	-	-	-	-
BG-2-15	Bag	15.0'	(SM)	23.8	-	-	-	-	100.0	12.3	-	-	-	-	-	-	-	-
BG-2-35	Bag	35.0'	ML	26.3	31	26	5	0.03	100.0	76.1	35.0	-	-	-	-	-	-	-
BG-2-50	Bag	50.0'	(SM)	19.7	-	-	-	-	99.9	42.8	-	-	-	-	-	-	-	-
BG-3-30	Bag	30.0'	CL	17.2	34	20	14	-0.21	99.6	60.7	27.5	-	-	-	-	-	-	-
BG-3-50	Bag	50.0'	(ML)	21.6	-	-	-	-	100.0	76.7	-	-	-	-	-	-	-	-
BG-3-70	Bag	70.0'	CL	14.8	37	21	16	-0.41	93.3	34.3	19.5	-	-	-	-	-	-	-
PZ-1-5	Bag	5.0'	ML	20.9	37	30	7	-1.40	99.9	85.3	19.0	-	-	-	-	-	-	-
PZ-1-40	Bag	40.0'	CL	19.7	43	24	19	-0.21	100.0	68.7	33.0	-	-	-	-	-	-	-
PZ-1-50	Bag	50.0'	(SC)	11.3	-	-	-	-	91.8	23.2	-	-	-	-	-	-	-	-
PZ-2-10	Bag	10.0'	CL	22.0	35	20	15	0.12	100.0	88.7	24.0	-	-	-	-	-	-	-
PZ-2-30	Bag	30.0'	ML	28.2	44	29	15	-0.03	100.0	78.1	25.0	-	-	-	-	-	-	-

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH

CH2M/WPWMA PLANNING & PERMITTING/CA
SUMMARY OF SOIL DATA

Sample Identification	Sample Type	Sample Depth	Soil Classification	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
					L.L.	P.L.	P.I.	L.I.	% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %		Moisture %	Dry (lb/cuft)		
PZ-2-60	Bag	60.0'	SC	15.2	30	20	10	-0.32	99.7	38.2	17.5	-	-	-	-	-	-	-

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH

OCTOBER 2017

1669494

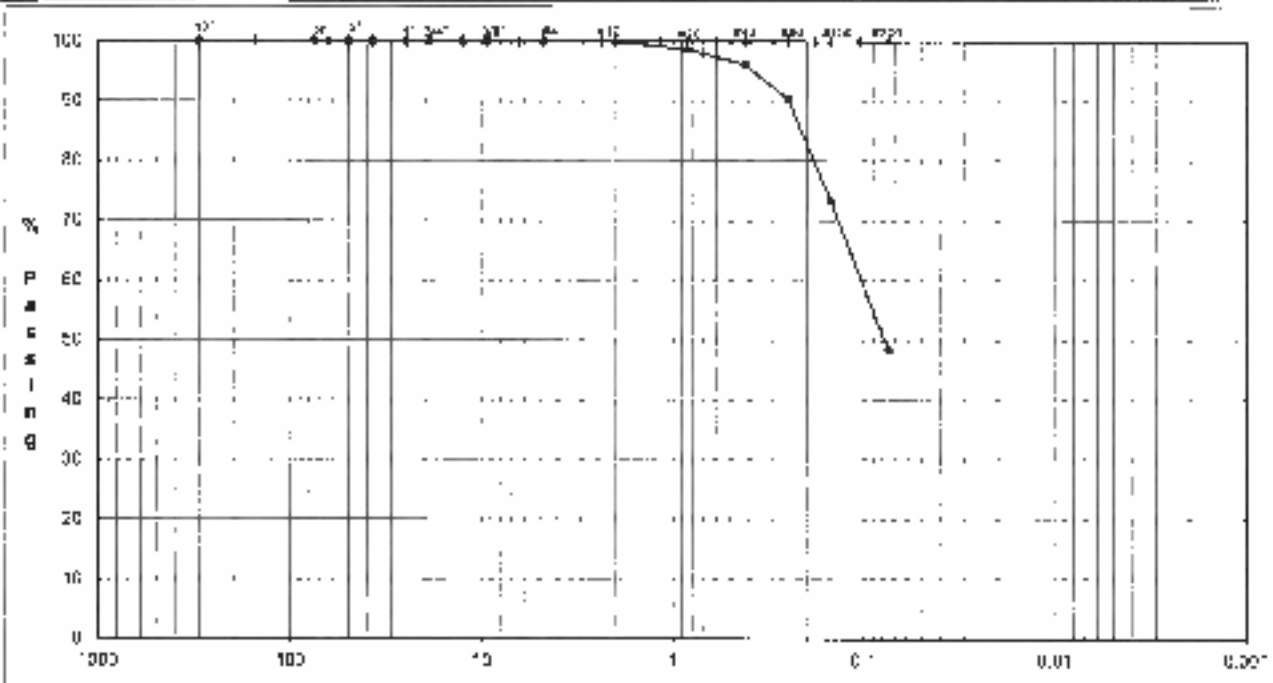
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CHEMOURS/FAYETTEVILLE PLANNING & PERMITTING/CA

SAMPLE ID: BG-1-S Depth: 5.0'

TYPE: Bag

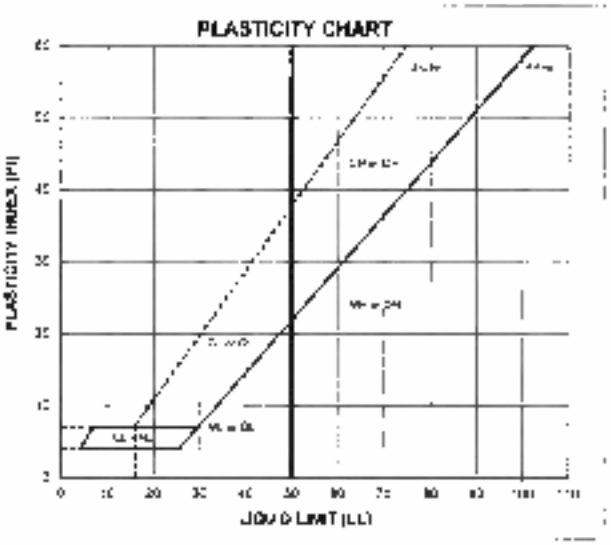


Particle size in millimeters

Gravel	Sand			Silt or Clay
Coarse / Fine	Coarse	Medium	Fine	
COBBLES	SAND			FINES

Particle Size (mm)	% Passing	Classification	Percentage
12.0"	914.4	100.0	
3.0"	75.0	100.0	Cobbles 0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel 0.0
#10	2.00	99.0	Coarse Sand 0.1
#20	0.85	98.2	
#40	0.43	96.2	Medium Sand 3.7
#60	0.25	90.3	
#100	0.15	73.4	
#200	0.075	48.3	Fine Sand 47.8
			Fines 48.2

U.S. Standard Sieves Sizes and Numbers



ATTERBERG LIMITS

Method D (Dry preparation)

PS	LL	PL	PI	LI
14.6				

LL (oven-dried)

DESCRIPTION: SAND and CLAYEY SILT, fine to coarse, light olive brown

GSD'S: (SM)

TECH FIDEL

DATE 10/5/17

CHECK

REVIEW

APPROVE

OCTOBER 2017

1649494

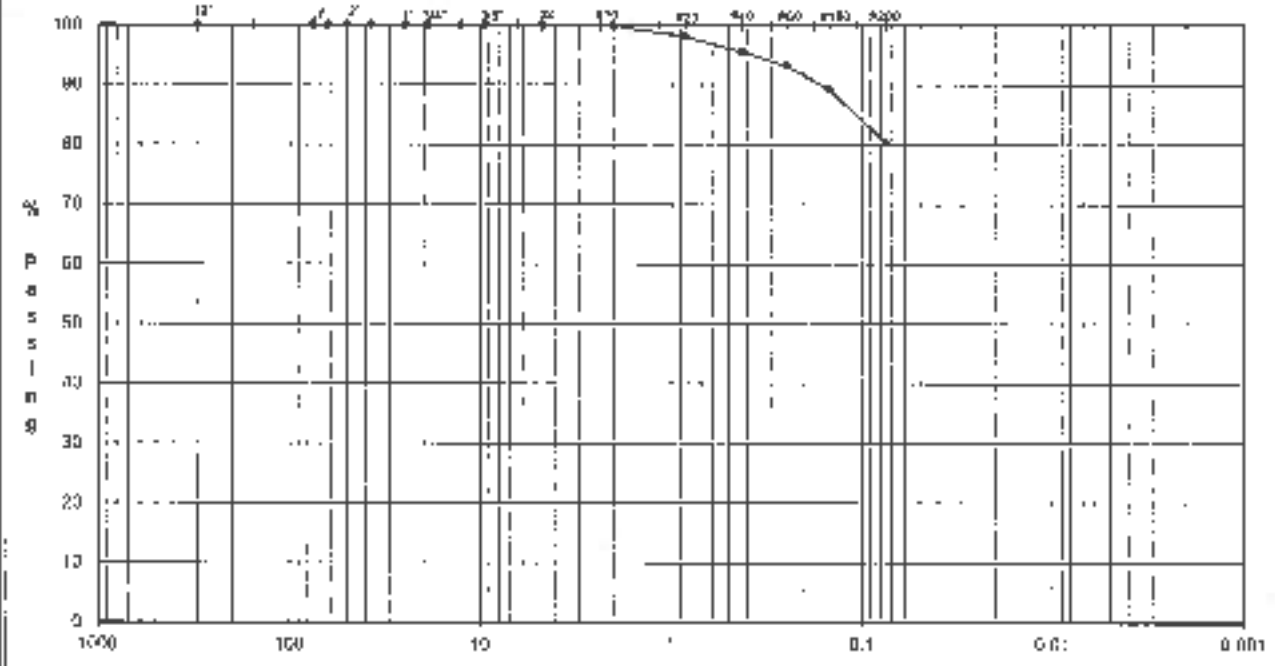
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-1-20 Depth: 20.0'

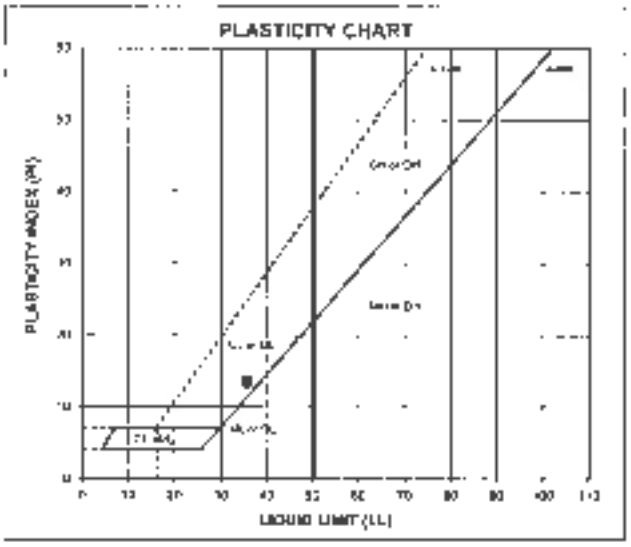
TYPE: Bag



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0	
3.0"	75.0	100.0	Cobbles 0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel 0.0
#10	2.00	99.9	Coarse Sand 0.1
#20	0.85	99.8	
#40	0.43	95.5	Medium Sand 4.4
#60	0.25	99.2	
#100	0.15	99.3	
#200	0.075	80.3	Fine Sand 15.2
			Fines 80.3



ATTERBERG LIMITS

Method - B (Dry preparation)

PL	LL	PI	Pa	LI
25.8	30	22	11	1.25

DESCRIPTION: sandy SILTY CLAY, fine to coarse, light olive brown

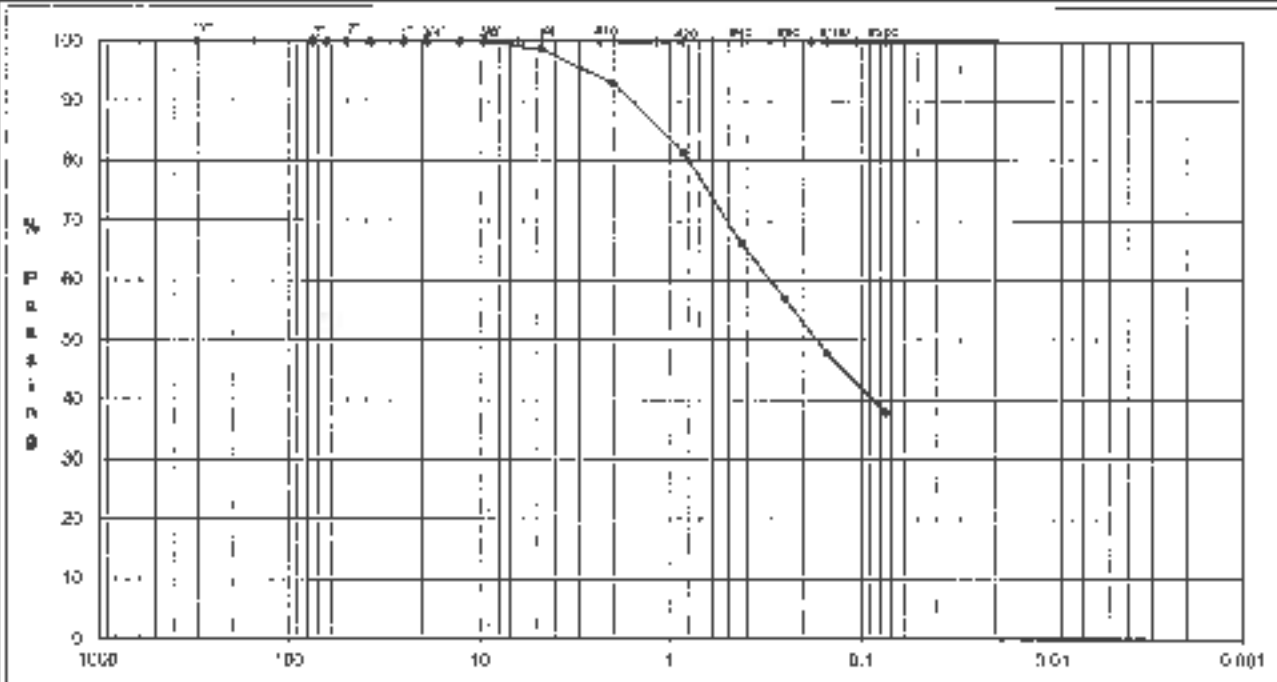
USCS: CL

TECH	ET/RH
DATE	10/3/17
CHECK	
REVIEW	
APPROVE	

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CH2M/VPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-1-70 Depth: 70.0'
TYPE: Bag

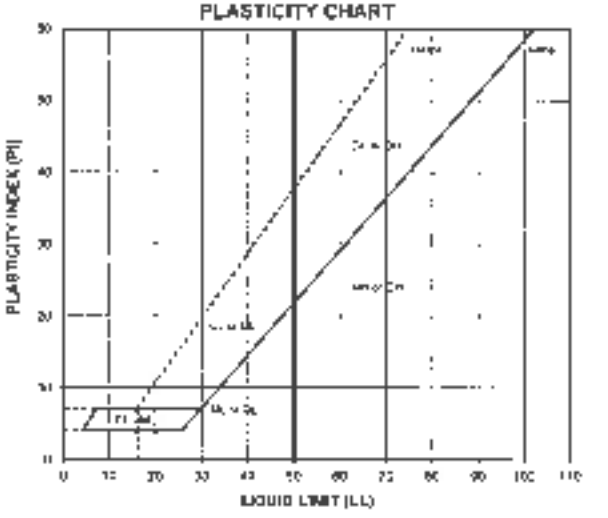


	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieve Size and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0	
3.0"	76.0	100.0	Cobbles	0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	98.6	Fine Gravel	1.4
#10	2.00	93.0	Coarse Sand	5.6
#20	0.85	81.3	
#40	0.43	66.2	Medium Sand	26.9
#60	0.25	56.8	
#100	0.15	47.5	
#200	0.075	39.9	Fine Sand	23.3
			Fines	39.9

PLASTICITY CHART



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PI	LI
23.3			

DESCRIPTION: SAND and SILTY CLAY, fine to coarse, trace fine gravel; light olive brown
USCS: (SC)

TECH: ITURH
DATE: 10/5/17
CHKD:
REVIEW:
APPROVE:

OCTOBER 2017

1648494

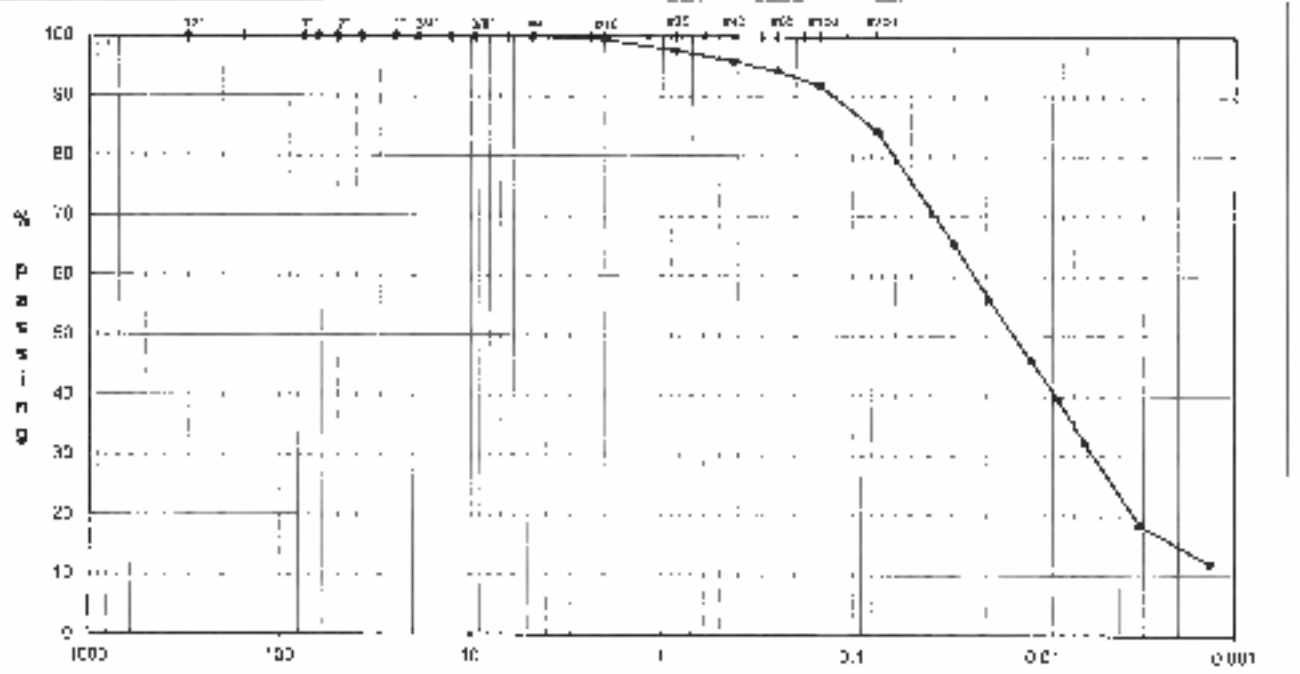
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CHZM/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-2-S - Depth: 5.0'

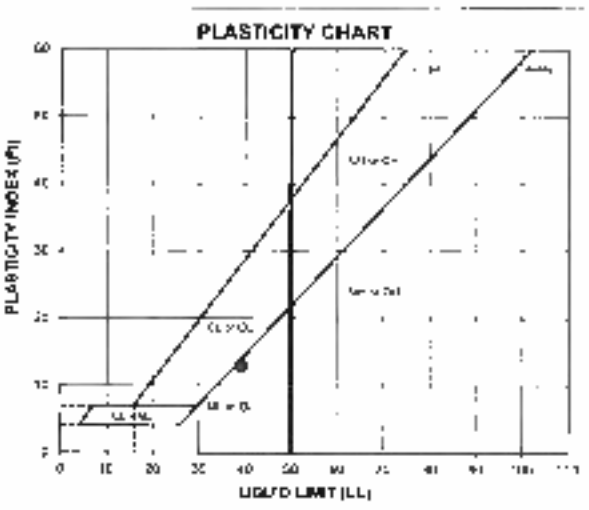
TYPE: Bag



Gravels	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieve Size and Numbers	Particle Size (mm)	% Passing	Fine Fraction	Percentage
3.0"	75.0	100.0		
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.5	100.0		
0.375	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	99.4	Coarse Sand	0.6
#20	0.85	97.6		
#40	0.43	95.8	Medium Sand	3.6
#60	0.25	94.2		
#100	0.15	91.8		
#200	0.075	84.2	Fine Sand	13.6

Sedimentation Analysis	Particle Size (mm)	% Pass		
	0.0100	66.1		
	0.0069	56.1		
	0.0042	46.0	Fines	
	0.0030	39.6	Silt or Clay	84.2
	0.0022	42.2		
	0.0013	38.4		
	0.0014	32.0		



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	PI	LI
23.8	39	26	33	-0.18

DESCRIPTION: sandy CLAYEY SILT, fine to coarse, light olive brown

USCS: ML

TECH	FT/Rd
DATE	10/4/17
CHECK	
REVIEW	
APPROVE	

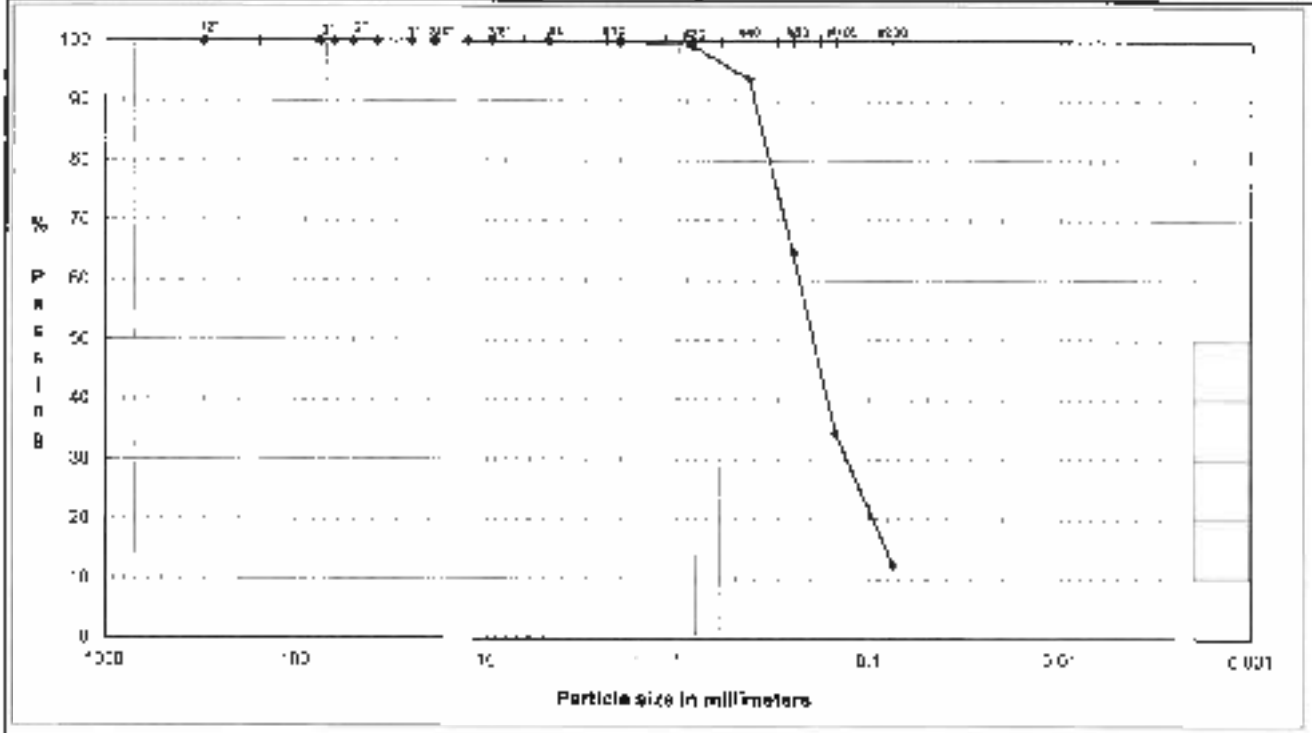
OCTOBER 2017

1669494

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

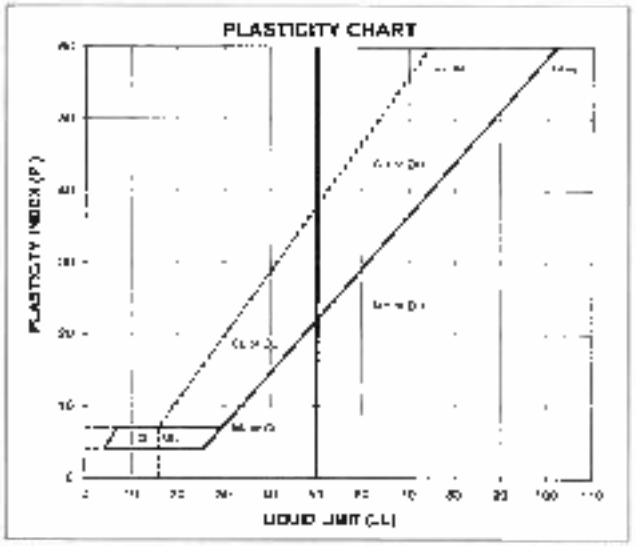
ASTM D6913, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-2-15 Depth: 15.0'
TYPE: Bag



	Cobbles	Gravel			Sand		Silt or Clay
		Fine	Coarse	Medium	Fine		Fines

U.S. Standard Sieve Size and Number	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.8	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	99.9	Coarse Sand	0.1
#20	0.85	99.3		
#40	0.43	93.6	Medium Sand	6.3
#60	0.25	64.5		
#100	0.15	34.4		
#200	0.075	32.3	Fine Sand	68.1
			Fines	32.1



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PI	PI	LI
5.8				

DESCRIPTION: SILTY SAND, fine to coarse; olive brown

USCS: (SM)

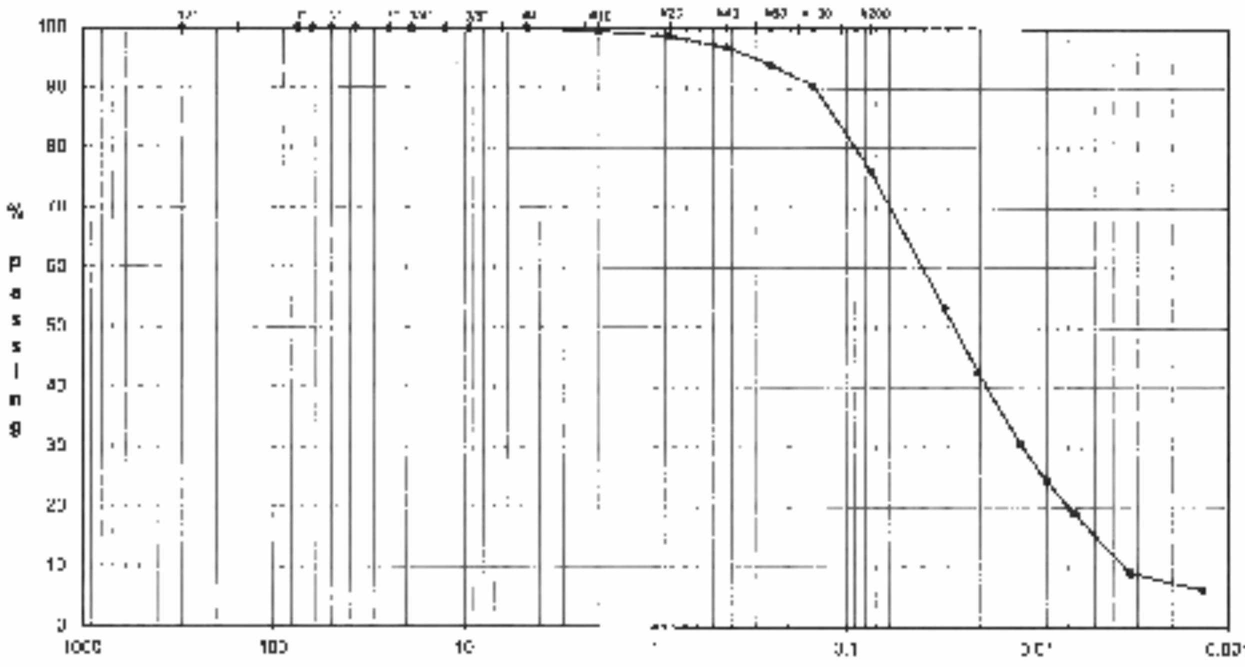
TECH	FISH
DATE	10/3/17
CHECK	
REVIEW	
APPROVE	

OCTOBER 2017 1649494

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: MG-2-35 - Depth: 35.0'
TYPE: Bag



Particle size in millimeters

	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

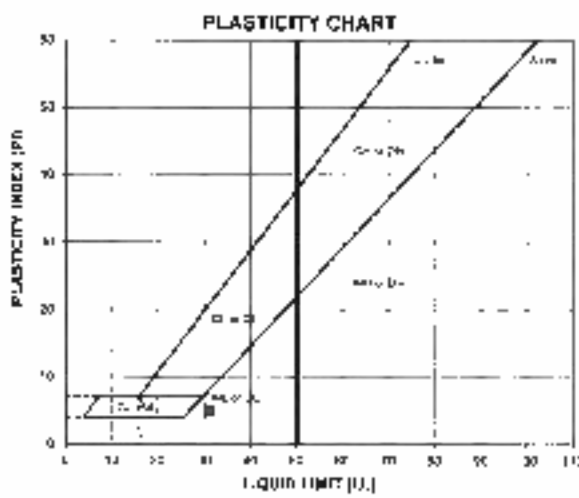
U.S. Standard Sieves Sizes and Numbers	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0	Cobbles	0.0
3.0"	75.0	100.0		
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.75	100.0	Fine Gravel	0.0
#10	2.00	99.5	Coarse Sand	0.5
#20	0.85	98.7		
#40	0.42	96.8	Medium Sand	2.7
#60	0.25	94.0		
#100	0.15	90.4		
#200	0.075	76.1	Fine Sand	20.6

Hydrometer Analysis	Size (mm)	% Passing	Particle Size Classification	Percentage
	0.0352	53.5	Fines Silt or Clay	76.1
	0.0227	42.5		
	0.0132	30.7		
	0.0094	24.4		
	0.0066	19.0		
	0.0033	9.0		
	0.0014	6.3		

DESCRIPTION: Sandy CLAYEY SILT, fine to coarse; light olive brown

USCS: ML

PLASTICITY CHART



ATTERBERG LIMITS

Method B (Dry preparation)

NM	LL	PL	PI	LI
26.3	31	26	5	0.03

LL (oven-dried)	
LL (oven-dried) / LL (not dried)	

JOB #	1649494
DATE	10/6/17
CHECK	[signature]
REVIEW	[signature]
APPROVE	

OCTOBER 2017 1649494

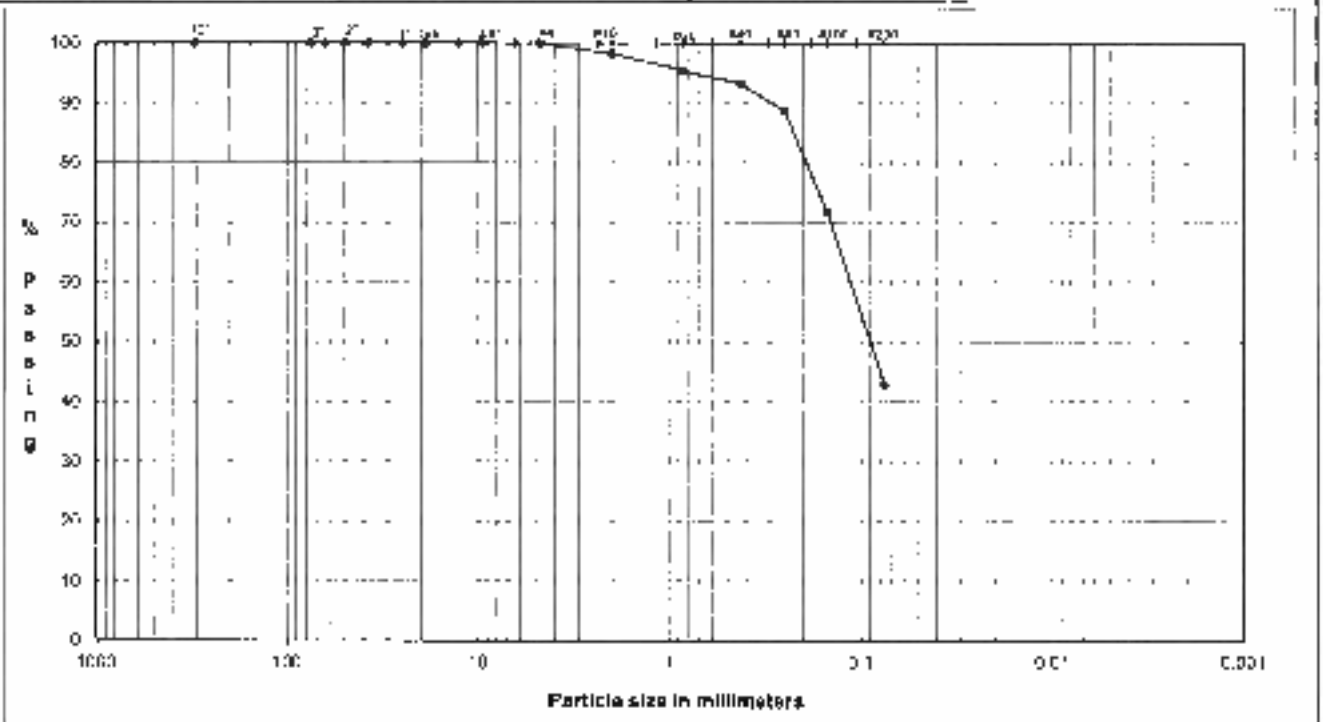
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CHEMOWPWMA PLANNING & PERMITTING-CA

SAMPLE ID: BH-2-50 Depth: 50.0'

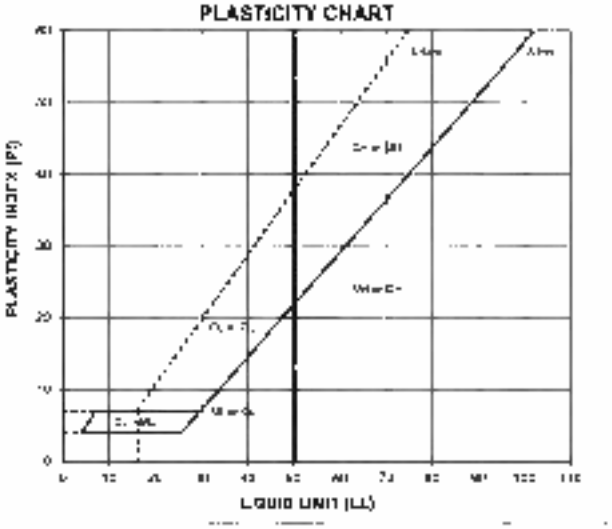
TYPE: Bag



COBBLES	GRAVEL			SAND			FINES
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay	

U.S. Standard Sieve Sizes and Numbers	Particle Size (mm)	% Passing	Particle Size Classifications	Percentage
12.7"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	62.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	99.9	Fine Gravel	0.1
#10	2.00	98.2	Coarse Sand	1.7
#20	0.85	95.4		
#40	0.43	93.2	Medium Sand	5.0
#60	0.25	88.7		
#100	0.15	71.7		
#200	0.075	42.8	Fine Sand	50.5
			Fines	42.8

PLASTICITY CHART



ATTERBERG LIMITS

Method: -#4 (Dry preparation)

PL	LL	PI	LI
19.7			

DESCRIPTION: SAND and CLAYEY SILT, fine to coarse, trace fine gravel, light olive brown

USCS: (SM)

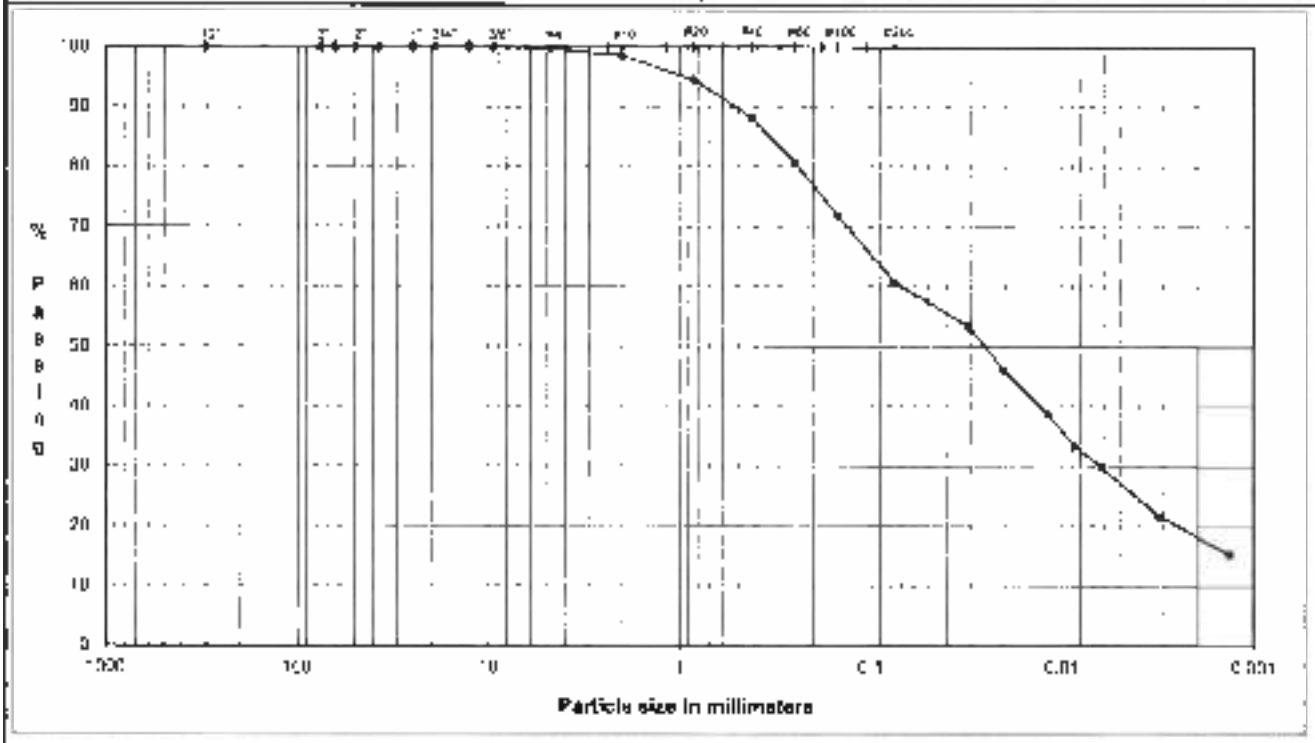
LOG	FJKH
DATE	10-5-17
CHECK	
REVIEW	
APPROVE	

OCTOBER 2017

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-3-30 • Depth: 30.0'
TYPE: Bag



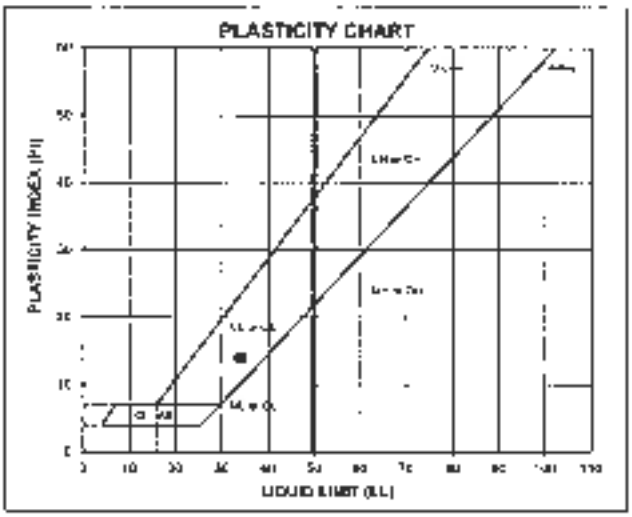
% GRAVEL	Coarse	Fine	Coarse	Medium	Fine	% SILT & CLAY
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Cumulative	Percentage
12.0"	304.8	100.0	
3.0"	75.2	100.0	Cobbles	0.0
2.5"	63.5	100.0	
2.0"	50.8	100.0	
1.5"	37.5	100.0	
1.0"	25.1	100.0	
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.6	99.6	Fine Gravel	0.4
#10	2.00	98.9	Coarse Sand	1.1
#20	0.85	94.5	
#40	0.43	88.2	Medium Sand	10.3
#60	0.25	80.1	
#100	0.15	71.9	
#200	0.075	60.7	Fine Sand	27.5

Hydrometer Analysis

mm	% Finer		
0.021	53.3		
0.020	44.8		
0.012	38.9	Fines	
0.0087	33.4	Silt or Clay	60.7
0.0062	29.8		
0.0031	21.7		
0.0012	15.4		



ATTERBERG LIMITS
Method -B (Dry preparation)

W%	LL	PL	PI	LI
17.2	34	20	14	-0.21

DESCRIPTION: SILTY CLAY and SAND, fine to coarse, trace fine gravel, light olive brown

USCS: CL

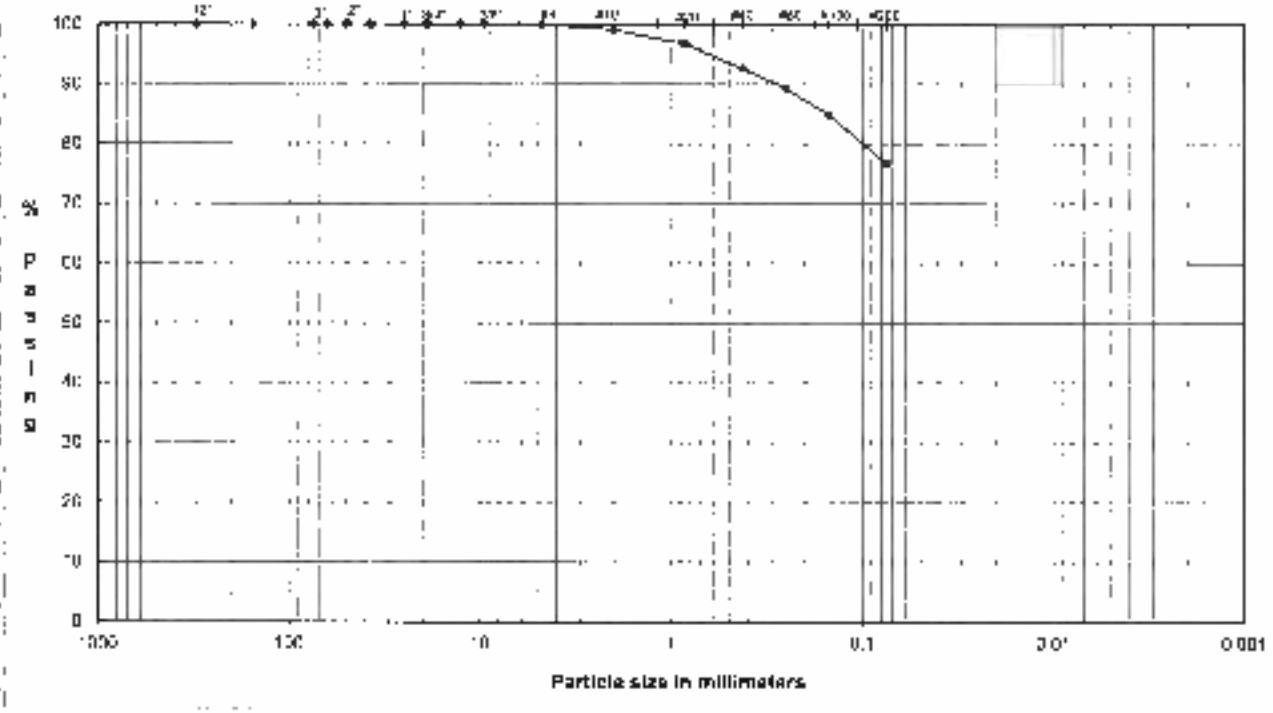
LL (oven-dried):
LL (non-oven-dried):

TECH	FT-RH
DATE	10/9/17
CHECK	
REVIEW	
APPROVE	

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-3-50 Depth: 50.0'
TYPE: Bag

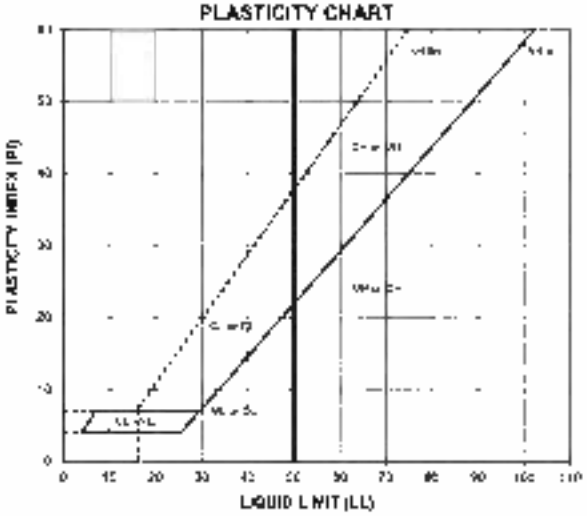


	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieve Sizes and Numbers

Particle Size		Percent Finer		
	(mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.8	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.6	100.0	Fine Gravel	0.0
#10	2.00	99.1	Gravel Total	0.9
#20	0.85	96.7		
#40	0.41	93.6	Medium Sand	6.6
#60	0.25	89.2		
#100	0.15	84.9		
#200	0.075	76.7	Fine Sand	15.8
			Sand Total	76.7

PLASTICITY CHART



DESCRIPTION: sandy CLAYEY SILT, fine to coarse; dark yellowish brown.

USCS: [MCL]

ATTERBERG LIMITS
Method B (Dry preparation)

NP	LL	PL	PI	LI
23.6				

TECH: FURH
DATE: 10/2/17
CHECK:
REVIEW:
APPROVE:

OCTOBER 2017 1649094

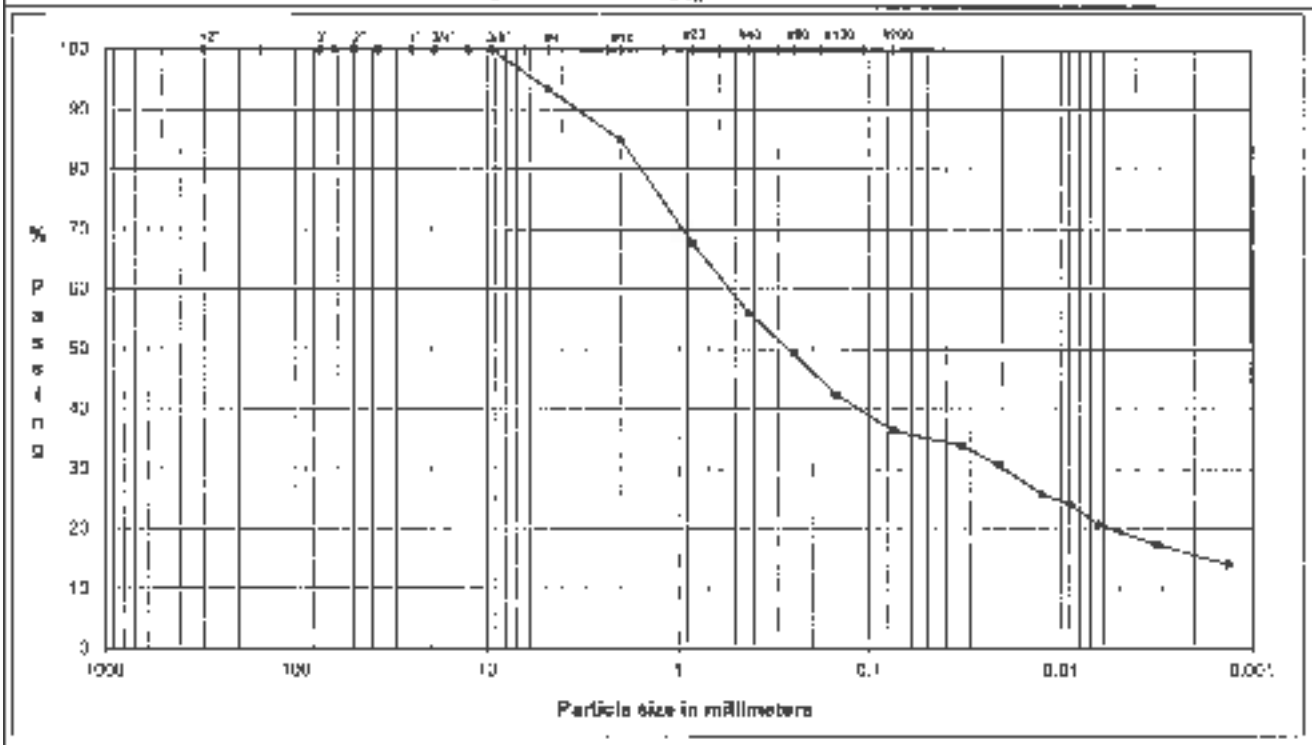
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CHISUWPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-3-70 – Depth: TO 0'

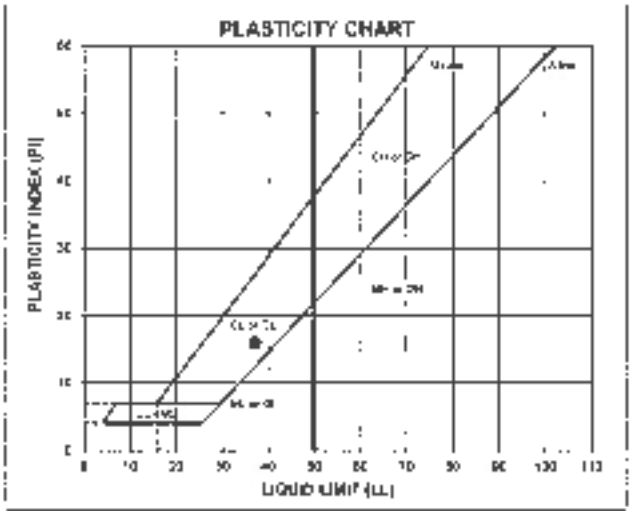
TYPE: Bag



	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
CODES	Gravel		Sand			Fines

U.S. Standard Sieves Sizes and Numbers	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	91.3	Fine Gravel	8.7
#10	2.00	84.9	Coarse Sand	6.4
#20	0.85	69.8		
#40	0.43	55.9	Medium Sand	29.0
#60	0.25	45.2		
#100	0.15	42.4		
#200	0.075	36.3	Fine Sand	89.6

Hydrometer Analysis	Particle Size (mm)	% Finer		
	0.031	33.9		
	0.021	30.6		
	0.013	25.7	Fines	
	0.0089	24.0	Silt or Clay	36.3
	0.0063	20.7		
	0.0032	17.4		
	0.0013	14.1		



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	PI	LI
14.8	37	23	36	-0.41

DESCRIPTION: SAND and SILTY CLAY, fine to coarse, some fine gravel, light olive brown

USCS: CL

LL (over-dried):

TECH: JT/RH

DATE: 10/4/17

CHECK:

REVIEW:

APPROVE:

OCTOBER 2017

1669494

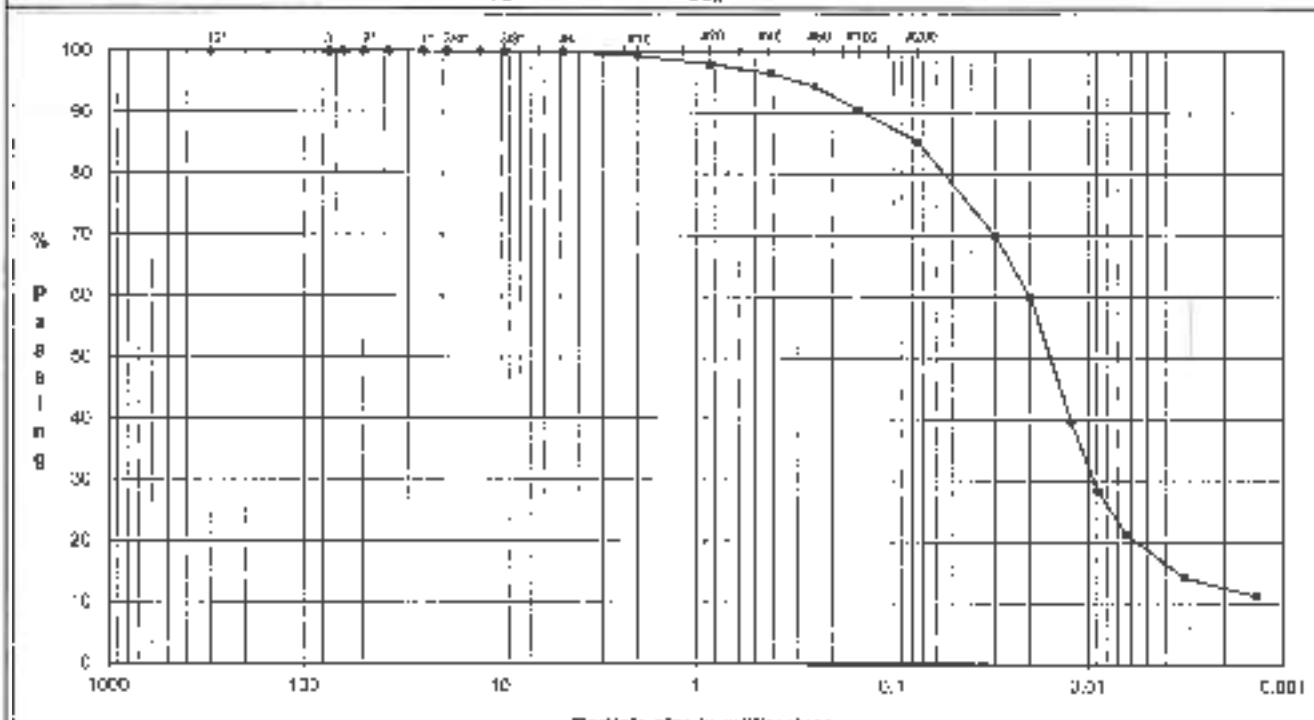
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: PZ-1-5 - Depth: 5.0'

TYPE: Bag



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay

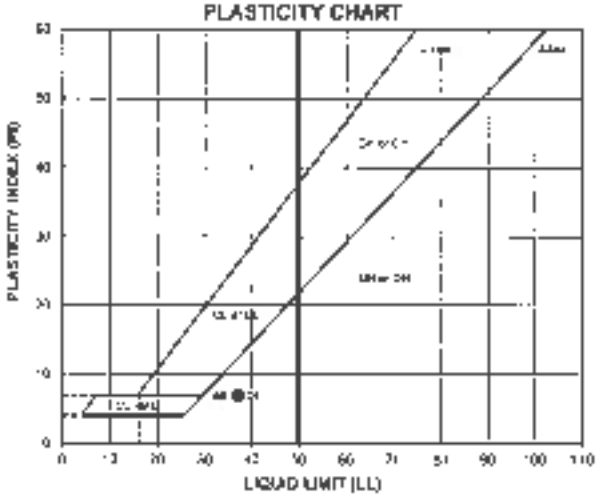
U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12"	100.0		
3.0"	100.0	Cobbles	0.0
2.5"	100.0		
2.0"	100.0		
1.5"	100.0		
1.0"	100.0		
0.75"	100.0	Coarse Gravel	0.0
0.5"	100.0		
0.375"	100.0		
#4	99.9	Fine Gravel	0.1
#10	99.3	Coarse Sand	0.7
#20	97.9		
#40	96.4	Medium Sand	2.1
#60	94.3		
#100	90.6		
#200	85.3	Fine Sand	11.1

Hydrometer Analysis

mm	% Finer		
0.030	69.9		
0.020	59.7		
0.012	39.5	Fines	
0.0059	28.4	Silt or Clay	85.3
0.0054	21.5		
0.0032	14.2		
0.0014	10.1		

PLASTICITY CHART



ATTERBERG LIMITS

Method: -B (Dry preparation)

PL	LL	PL	PI	LI
28.9	37	30	7	-1.40

LL (oven-dried)

DESCRIPTION: sandy CLAYEY SILT, fine to coarse, trace fine gravel, light olive brown.

USCS: SM

TECH: FT-RK

DATE: 10-4-17

CHECK:

REVIEW:

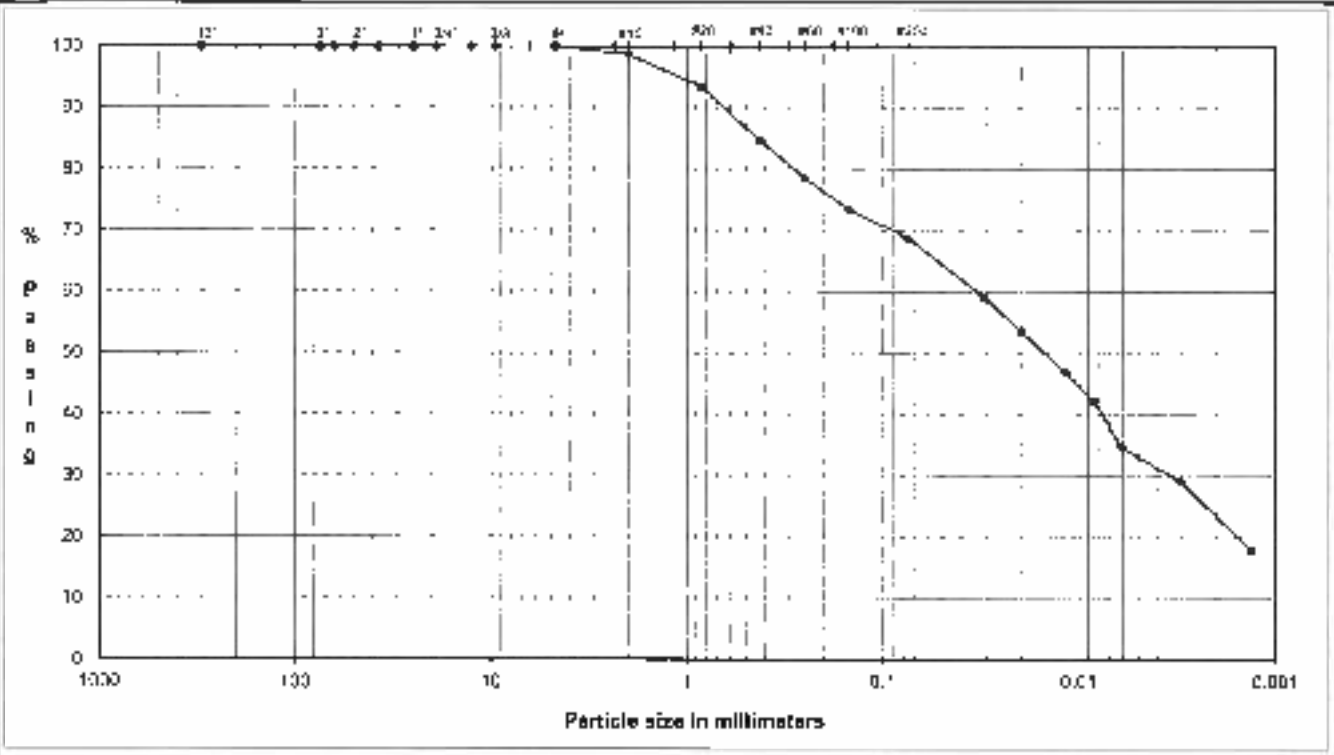
APPROVE:

OCTOBER 2017 1649494

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2MDWPWMA PLANNING & PERMITTING/CA
SAMPLE ID: PZ-1-40 - Depth: 40.0'
TYPE: Bag



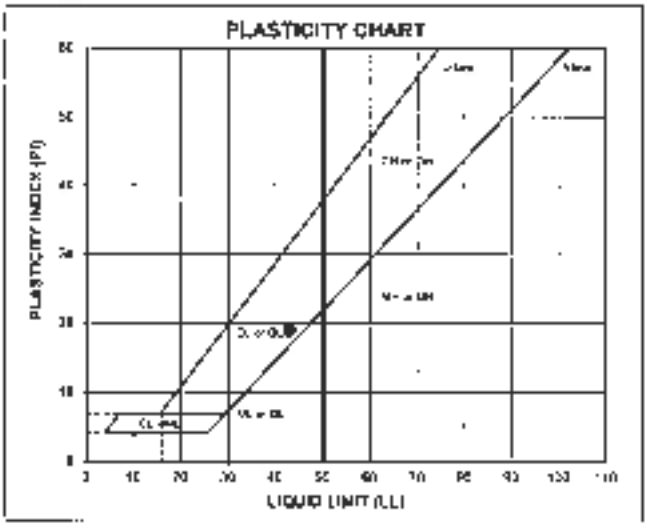
	Cobbles	Gravel	Coarse	Medium	Fine	Silt or Clay
		GRAVEL	SAND			FINES

U.S. Standard Sieves Sizes and Numbers

Particle size Inch	mm	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	98.6	Coarse Sand	1.4
#20	0.85	93.4		
#40	0.43	84.5	Medium Sand	14.1
#60	0.25	78.4		
#100	0.15	71.4		
#200	0.075	68.7	Fine Sand	15.8

Hydrometer Analysis

Inch	Mm		
0.030	59.0		
0.020	53.4		
0.012	46.8	Silt or Clay	68.7
0.0064	42.1		
0.0041	34.6		
0.0031	29.0		
0.0013	17.8		



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PL	PI	LI
19.7	43	24	19	-0.21

LL oven-dried:
LL not oven-dried:

DESCRIPTION: sandy SILTY CLAY, fine to coarse; very light brown

USCS: CL

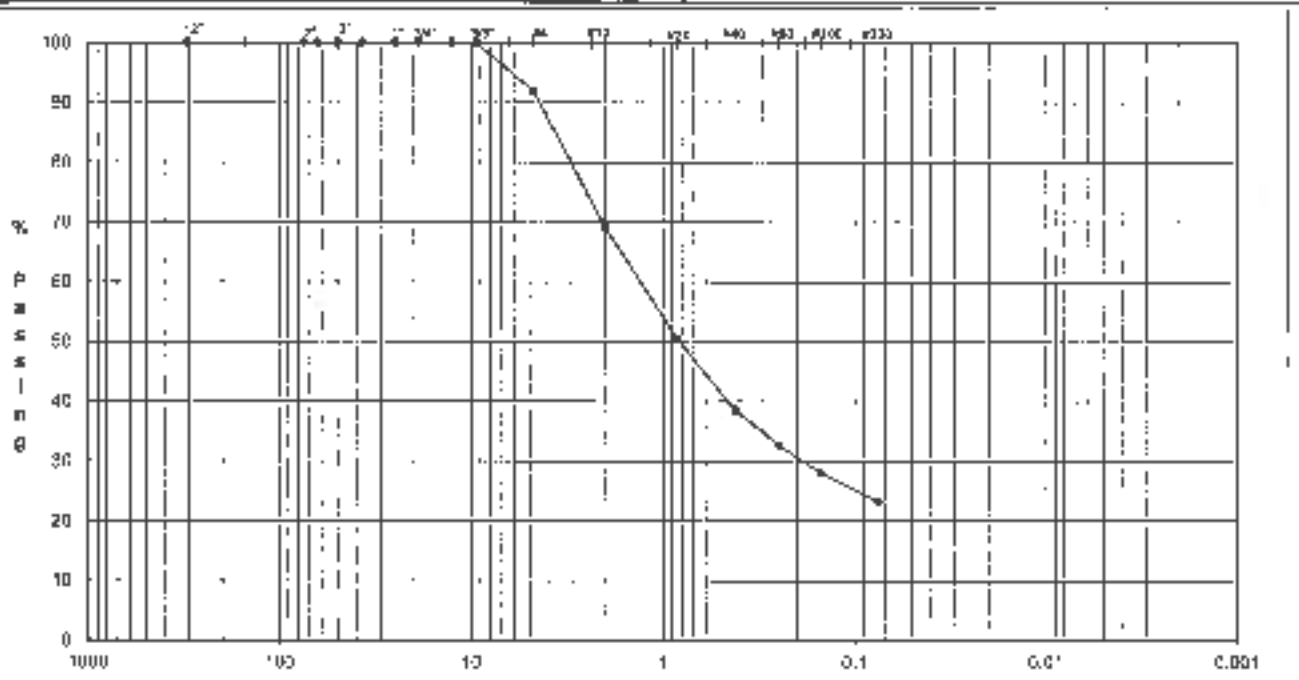
TECH: LT
DATE: 10/5/17
CHECK:
REVIEW:
APPROVE:

OCTOBER 2017 1640494

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D6913, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID PZ-1-80 Depth: 80.0'
TYPE: Bag

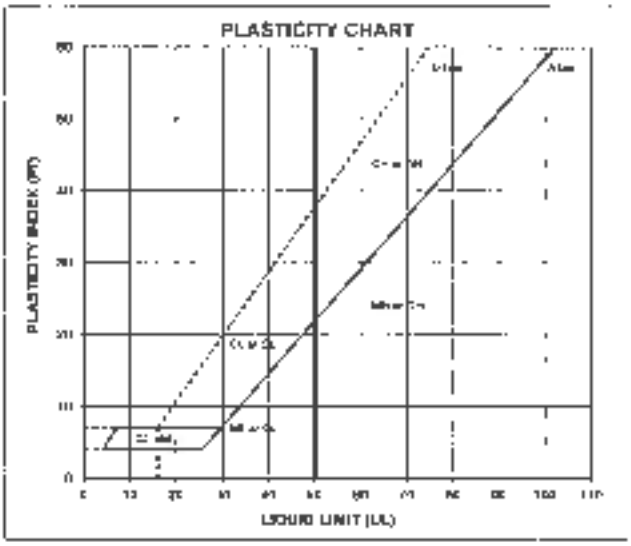


Particle size in millimeters

	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieves Size and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0	
3.0"	75.0	100.0	Cobbles 0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	99.8	Fine Gravel 8.2
#10	2.00	69.8	Coarse Sand 22.8
#20	0.85	60.6	
#40	0.43	38.6	Medium Sand 30.4
#60	0.25	32.8	
#100	0.15	28.8	
#200	0.075	23.2	Fine Sand 85.3
			Fines 23.2



ATTERBERG LIMITS
Method A (Dry preparation)

PL	LL	PI	GI	LI
18.3				

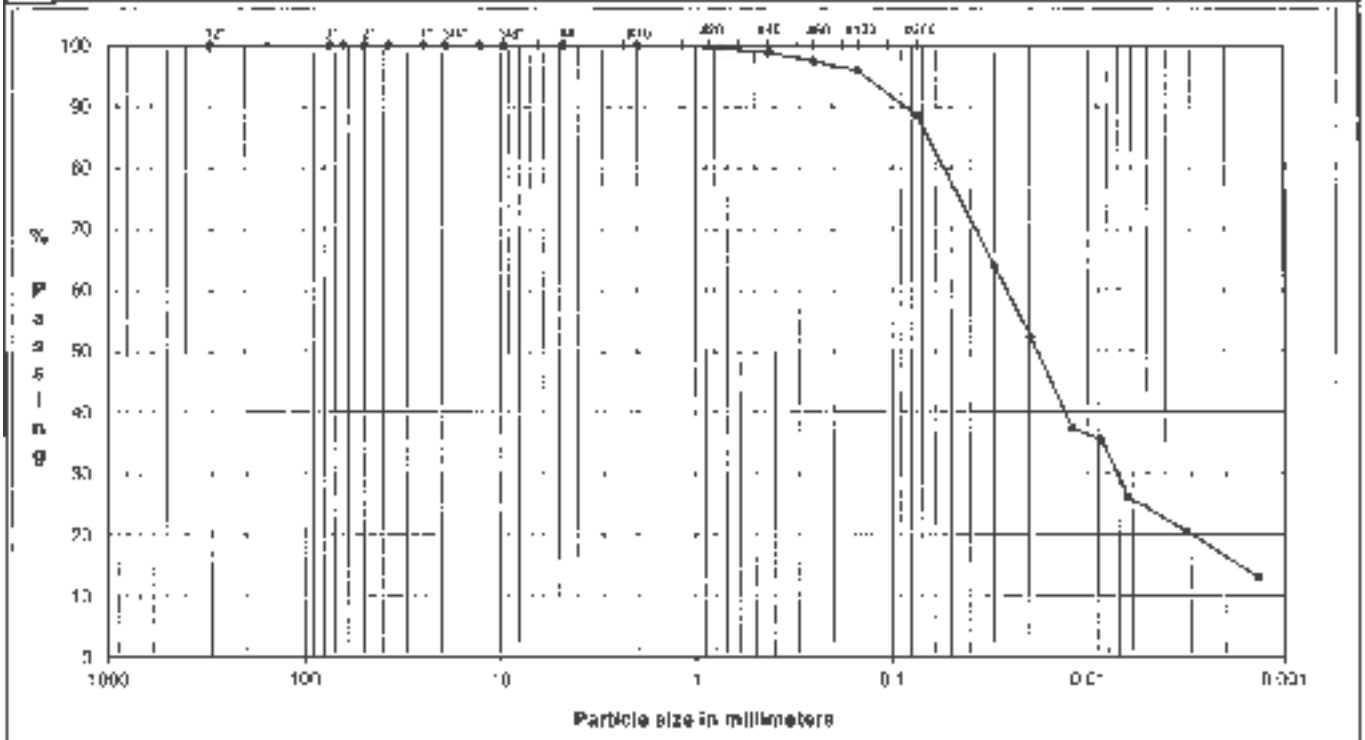
DESCRIPTION: CLAYEY SAND, fine to coarse, some fine gravel, dark yellowish brown and white
USCS: (SC)

TECH	LWH
DATE	10/5/17
CHECK	
REVIEW	
APPROVE	

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: PZ-2-10 - Depth: 10.0'
TYPE: Bag



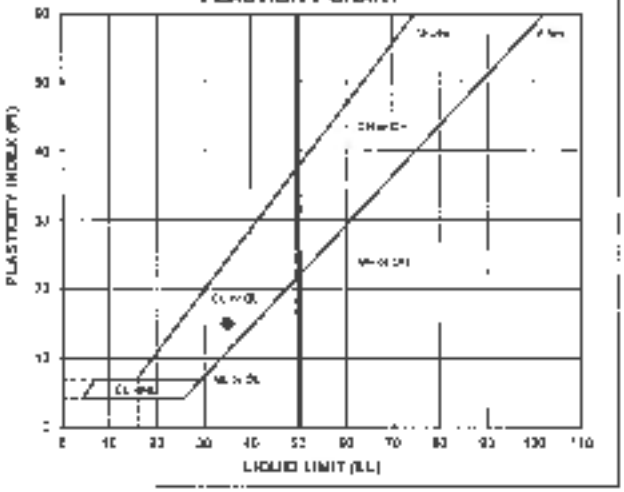
GRAVEL		SAND		FINES
	Coarse / Fine	Coarse / Medium / Fine		Silt or Clay

U.S. Standard Sieve Sizes and Numbers

Particle Size	(mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0	Cobbles	0.0
3.0"	75.0	100.0		
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	100.0	Coarse Sand	0.0
#20	0.85	99.7		
#40	0.43	98.8	Medium Sand	1.2
#60	0.25	97.4		
#100	0.15	95.8		
#200	0.075	89.7	Fine Sand	10.1

Hydrometer Analysis

(mm)	% Finer		
0.030	83.7		
0.020	82.4		
0.012	81.4	Fines	
0.0086	35.6	Silt or Clay	89.7
0.0062	76.2		
0.0031	70.6		
0.0014	13.1		



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PI	LI
22.0	35	13	-0.32

LL (oven-dried) / LL (oven-dried)

DESCRIPTION: SILTY CLAY, some fine to coarse sand, very light brown.

USCS: CL

TECH	FT
DATE	10/2/17
CHECK	
REVIEW	
APPROVE	

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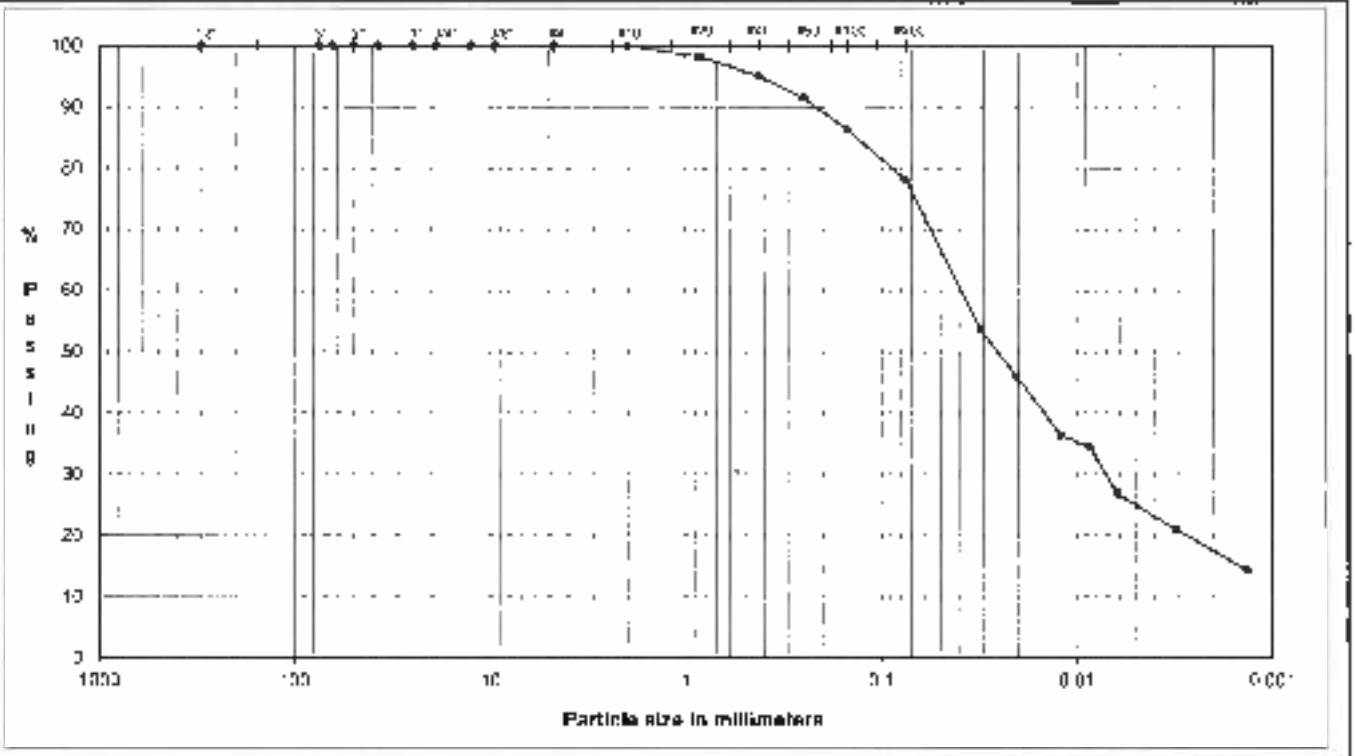
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID.: PZ-2-30 - Depth: 30.0'
TYPE: Bag



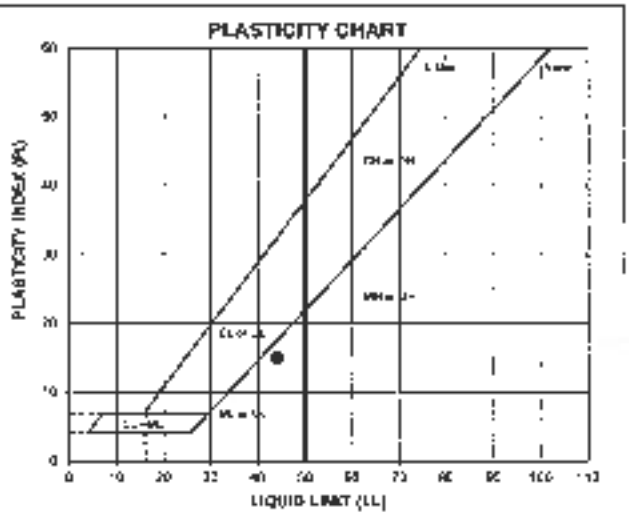
COBBLES	GRAVEL		SAND		FINES
	Coarse	Fine	Coarse	Medium / Fine	Silt or Clay

U.S. Standard Sieves and Numbers

	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.0	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	100.0	Coarse Sand	0.0
#20	0.85	99.3		
#40	0.43	95.1	Medium Sand	4.9
#60	0.25	91.5		
#100	0.15	86.2		
#200	0.075	78.1	Fine Sand	17.4

Hydrometer Analysis

mm	%Finer		
0.031	53.6		
0.020	46.0		
0.013	36.4	Fines	
0.0087	34.5	Silt or Clay	78.1
0.0063	26.8		
0.0045	21.6		
0.0014	14.4		



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PI	FI	LI
28.2	44	16	15	0.03

LL (oven-dried) / LL (as-received)

DESCRIPTION: sandy CLAYEY SILT, fine to medium; very light brown

USCS: ML

TECH	FT
DATE	10/5/17
CHECK	
REVIEW	
APPROVE	

OCTOBER 2017

1649494

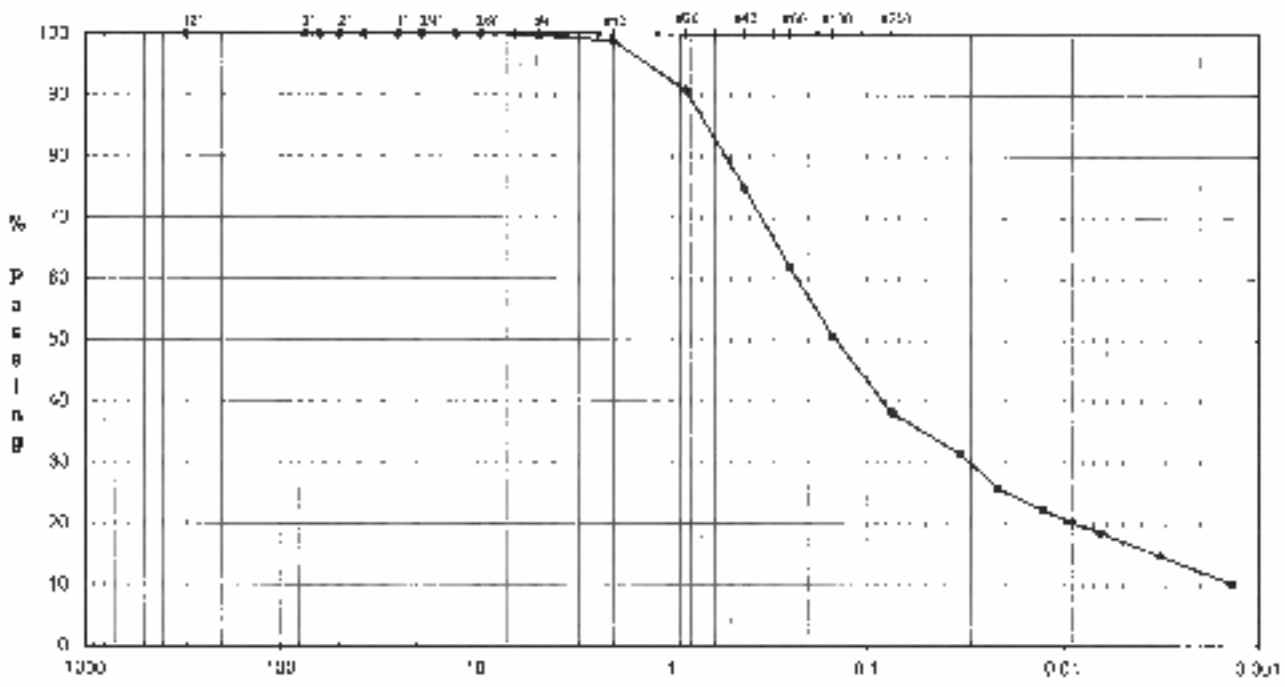
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: PZ-2-60 - Depth: 60.0'

TYPE: Bag



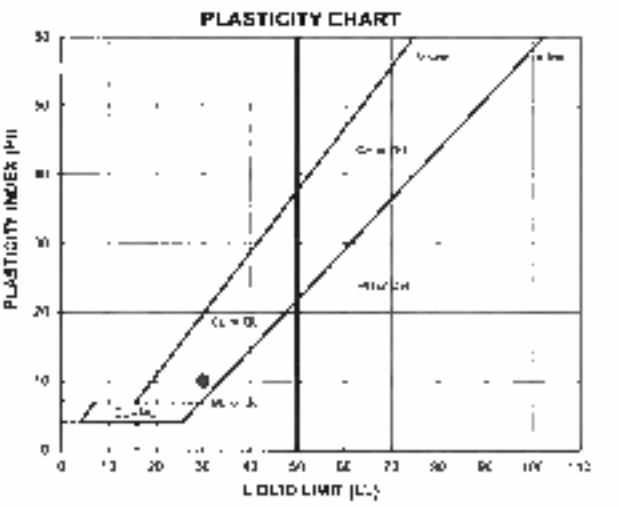
	Gravel	Sand	Silt	Clay
Percentages	0.0	61.8		38.2

U.S. Standard Sieve Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.5" 104.8	100.0		
3.0" 75.0	100.0	Cobbles	0.0
2.5" 62.5	100.0		
2.0" 50.0	100.0		
1.5" 37.5	100.0		
1.0" 25.0	100.0		
0.75" 19.0	100.0	Coarse Gravel	0.0
0.50" 12.7	100.0		
0.375" 9.5	100.0		
#4 4.8	99.7	Fine Gravel	0.3
#10 2.00	99.0	Coarse Sand	0.9
#20 0.85	98.9		
#40 0.43	74.8	Medium Sand	24.0
#60 0.25	63.0		
#100 0.15	58.6		
#200 0.075	38.2	Fine Sand	36.6

Hydrometer Analysis

Diameter (mm)	% Finer		
0.034	33.4		
0.022	25.9		
0.013	22.2	Fines	
0.0090	20.3	Silt or Clay	38.2
0.0064	18.5		
0.0032	14.8		
0.0014	10.2		



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	#40	#10
18.2	38	20	10	0.16

LL (oven dried)

DESCRIPTION: SAND and 50 TV CLAY, fine to coarse, trace fine gravel, light olive brown.

USCS: SC

TECH FT

DATE 10/5/17

CHECK

REVIEW

APPROVE

APPENDIX C

Laboratory Test Results - Bulk Samples

CH2M/WPWMA PLANNING & PERMITTING/CA
SUMMARY OF SOIL DATA

Sample Identification	Sample Type	Sample Depth	Soil Classification	Natural Moisture %	Atterberg Limits				Grain Size Distribution			Compaction		Gs	Unit Weight		Permeability (cm/sec)	Additional Tests Conducted (See Notes)
					L.L.	P.L.	P.I.	L.I.	% Finer No. 4 Sieve	% Finer No. 200 Sieve	% Finer .005 mm	Maximum Dry Density (lb/cuft)	Optimum Moisture %		Moisture %	Dry (lb/cuft)		
BG-1	Bulk	25.0-40.0'	CL	20.9	41	20	21	0.02	100.0	76.1	44.0	109.5	16.2	-	18.1	98.8	1.5E-07	-
DG-1	Bulk	50.0-60.0'	CL	34.0	36	17	18	0.93	100.0	67.5	34.0	119.0	12.9	-	-	-	-	-
BG-2	Bulk	20.0-25.0'	CL	21.2	40	20	20	0.07	100.0	76.8	46.0	114.1	16.7	-	18.7	103.1	4.7E-08	-
DG-1	Bulk	5.0-10.0'	CL	24.6	43	23	20	0.06	100.0	84.9	48.5	108.6	17.8	-	20.5	97.4	1.6E-07	-
BG-3	Bulk	10.5-15.0'	CL	17.5	37	17	20	0.00	100.0	69.8	39.5	119.0	13.2	-	-	-	-	-
DG-1	Bulk	20.0-25.0'	SC	10.0	30	17	13	-0.53	100.0	49.7	30.0	126.8	10.3	-	-	-	-	-
PZ-1	Bulk	11.0-15.0'	SC-SM	6.9	19	15	4	-2.16	100.0	43.0	21.0	127.0	10.0	-	-	-	-	-
PZ-1	Bulk	15.0-30.0'	CL	25.2	41	21	20	0.35	100.0	85.2	42.6	113.3	17.0	-	18.3	102.8	5.0E-08	-
PZ-2	Bulk	40.0-45.0'	CL	25.3	43	22	21	0.15	100.0	78.2	53.7	115.0	15.9	-	17.8	103.3	2.6E-07	-

ABBREVIATIONS: LIQUID LIMIT (LL)
PLASTIC LIMIT (PL)
PLASTICITY INDEX (PI)
LIQUIDITY INDEX (LI)
SPECIFIC GRAVITY (Gs)
MOISTURE (Mc)

NOTES: T = TRIAXIAL TEST
U = UNCONFINED COMPRESSION TEST
C = CONSOLIDATION TEST
DS = DIRECT SHEAR TEST
O = ORGANIC CONTENT
P = pH

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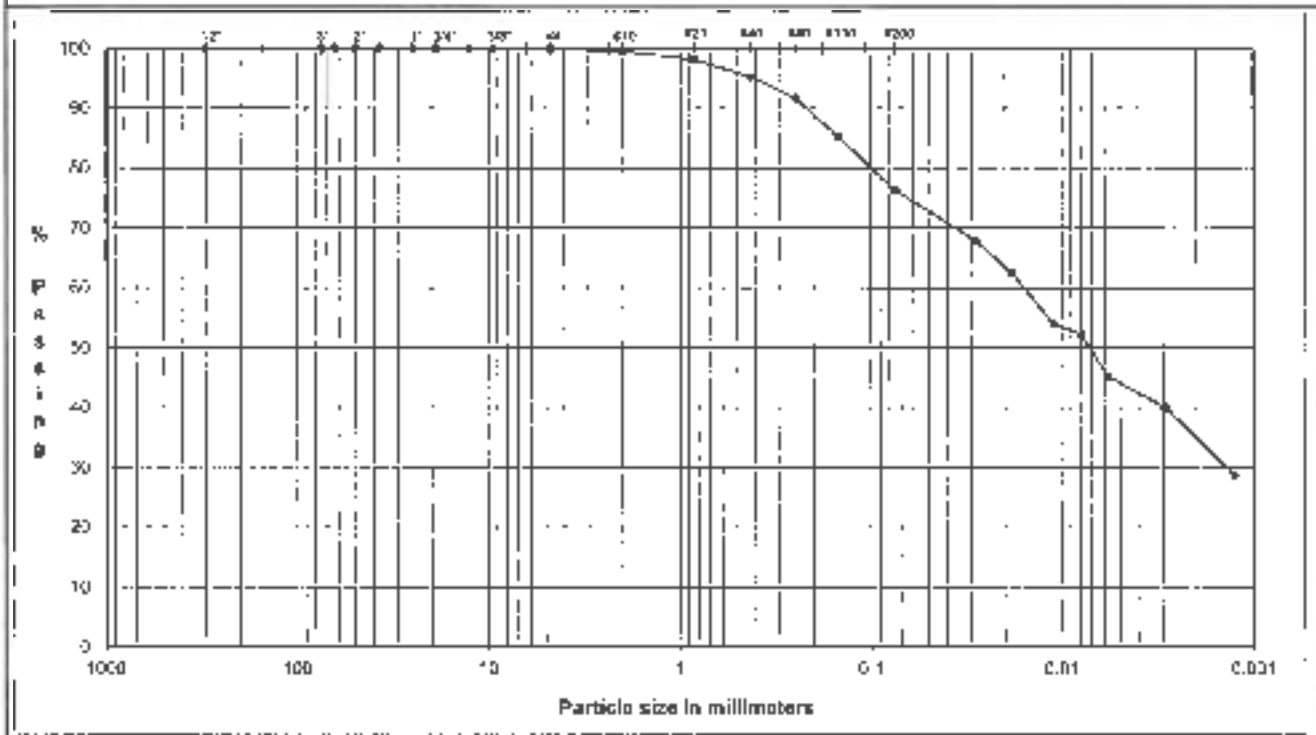
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-1 - Depth: 25.0-40.0'
TYPE: Bulk



COBBLES	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	GRAVEL		SAND			FINES

U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Classification	Percentage
12.0"	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	62.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	99.6	Coarse Sand	0.4
#20	0.85	98.1	
#40	0.43	95.2	Medium Sand	4.3
#60	0.25	91.7	
#100	0.15	85.4	
#200	0.075	76.3	Fine Sand	19.4

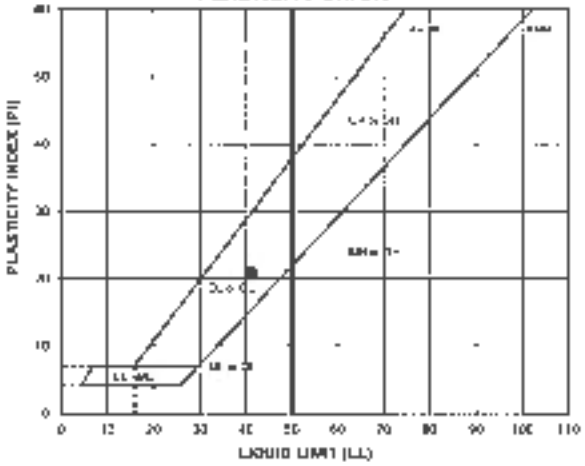
Hydrometer Analysis

Particle Size (mm)	% Finer	Classification	Percentage
0.023	67.9		
0.013	62.6		
0.01	53.9	Fines	
0.0079	51.2	Silt or Clay	76.3
0.0058	45.2		
0.0029	40.0		
0.0013	28.7		

DESCRIPTION: sandy SILTY CLAY, fine to coarse, brown.

USCS: CL

PLASTICITY CHART



ATTERBERG LIMITS
Method -B (Dry preparation)

PL	LL	PL	PI	LI
20.9	41	20	21	0.02

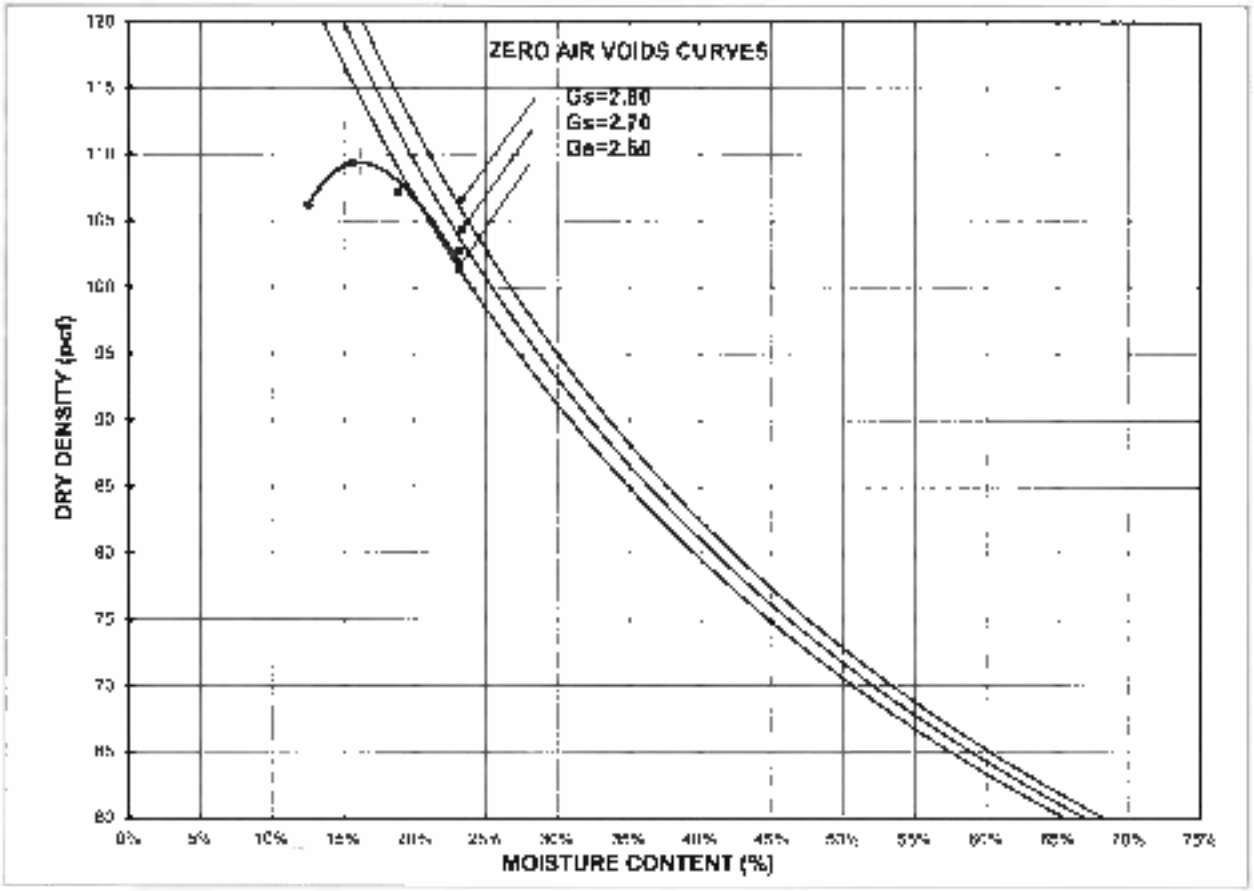
LL oven dried / LL oven dried

TECH	CT/RH
DATE	10-4-17
CHECK	
REVIEW	
APPROVE	

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Dry Method

PROJECT NAME: CH2M/AVPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: BG-1 DEPTH 25.0-40.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	106.2	12.5%
2	109.5	15.6%
3	107.2	16.8%
4	102.8	23.1%

Maximum Dry Density (pcf)	109.5
Optimum Moisture (%)	16.2
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	20.9%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: sandy SILTY CLAY, fine to coarse, brown.

USCS: CL

CHECK
REVIEW
APPROVE

OCTOBER 2017

1649494

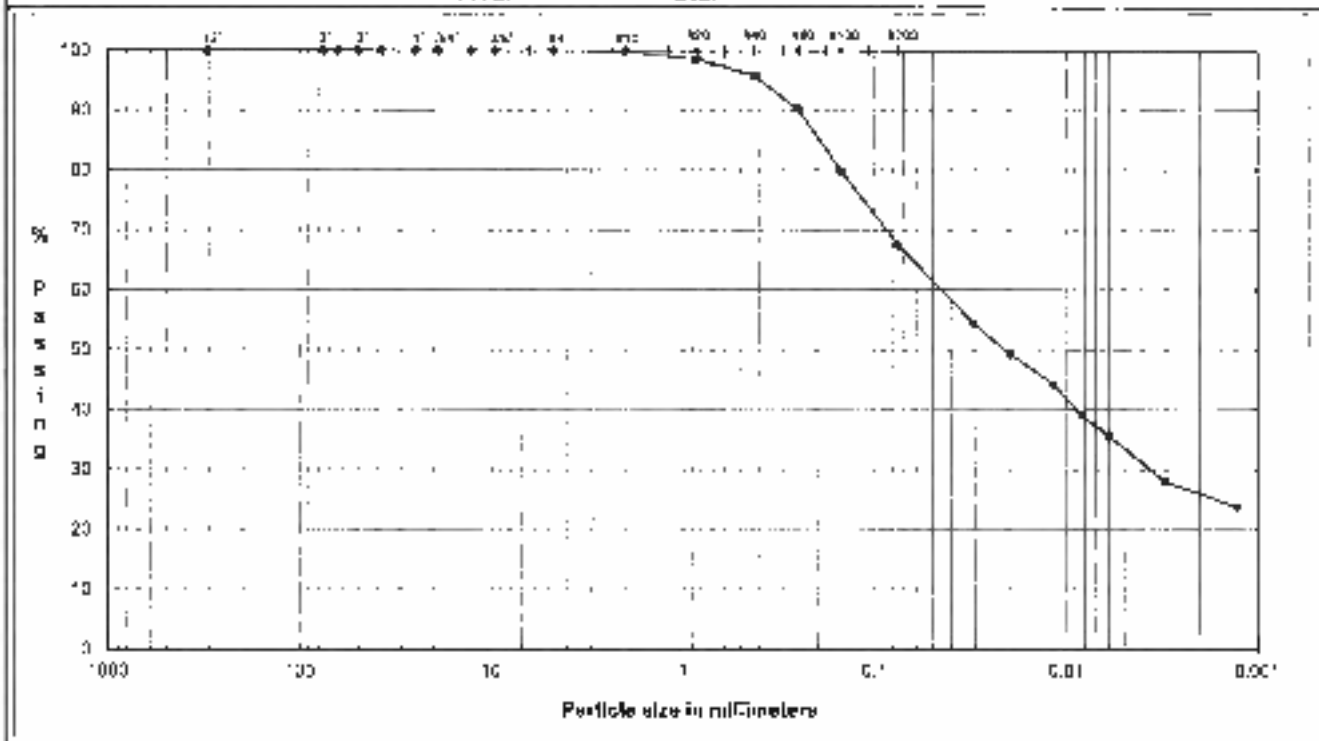
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-1 - Depth: 50.0-60.0'

TYPE: Bulk



Particle size in millimeters

	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
COBBLES	GRAVEL		SAND			FINES

U.S. Standard Sieve Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.7"	304.8	100.0	
3.0	75.0	100.0	Cobbles 0.0
2.5	62.5	100.0	
2.0	50.0	100.0	
1.5	37.5	100.0	
1.0	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.5"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel 0.0
#10	2.0	99.8	Coarse Sand 0.2
#20	0.85	98.5	
#40	0.43	95.9	Medium Sand 4.0
#60	0.25	90.2	
#100	0.15	71.8	
#200	0.075	67.5	Fine Sand 28.4

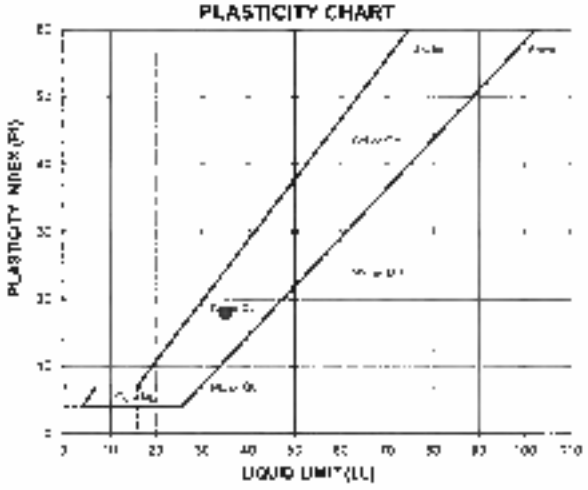
Hydrometer Analysis

mm	% Finer		
0.030	54.3		
0.020	49.2		
0.013	44.1	Fines Silt or Clay	67.5
0.0081	39.0		
0.0060	35.7		
0.0035	28.0		
0.0013	23.8		

DESCRIPTION: steady SILTY CLAY, little to abouse, olive brown

USCS: CL

PLASTICITY CHART



ATTERBERG LIMITS

Method B (Dry preparation)

PL	LL	PI	M	D
34.0	35	13	18	0.91

LL (over-dried)

TECH: FEHL

DATE: 10-4-17

CHECK:

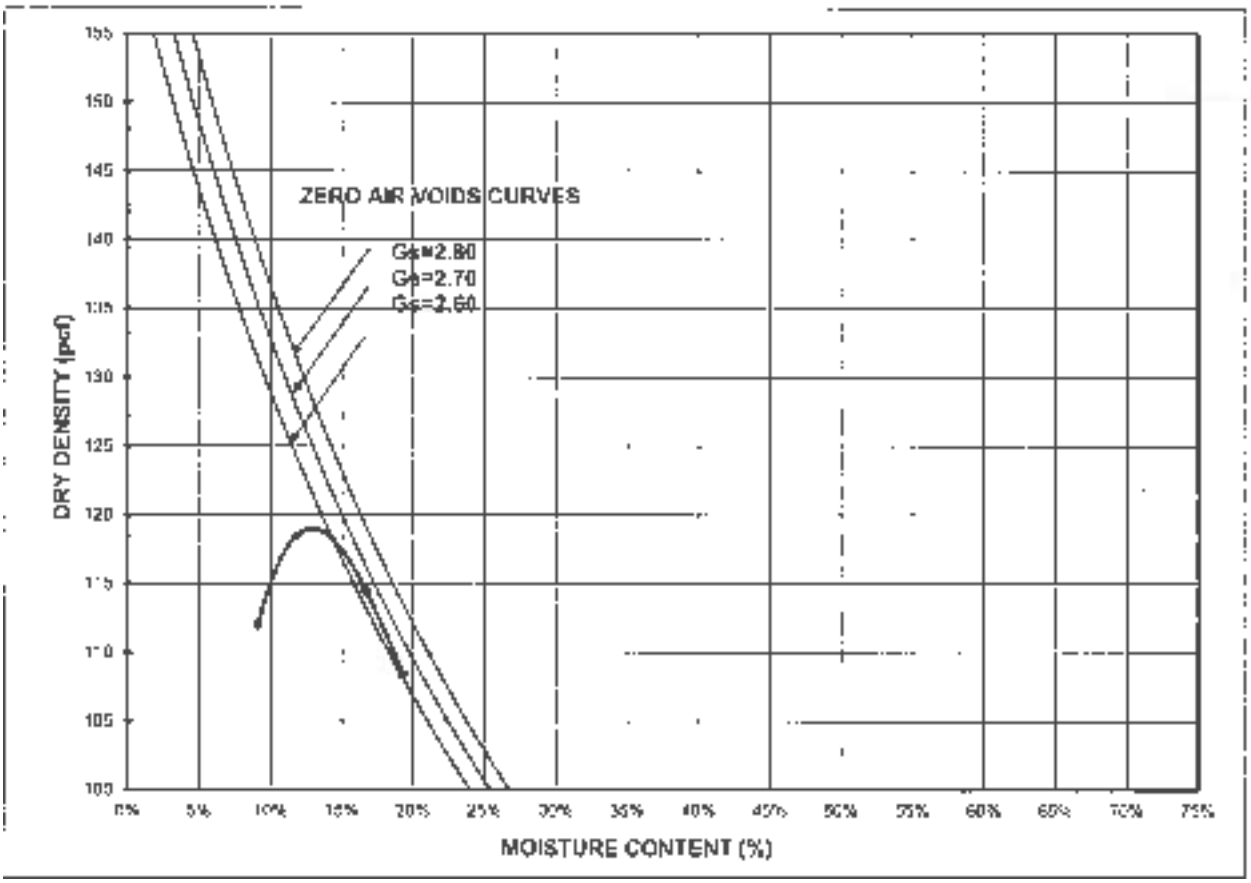
REVIEW:

APPROVE:

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Dry Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: BG-1 DEPTH: 50.0-60.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	112.0	9.1%
2	115.5	11.8%
3	114.5	16.7%
4	106.4	19.3%

Maximum Dry Density (pcf)	119.0
Optimum Moisture (%)	12.9
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	34.0%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: sandy SILTY CLAY, fine to coarse, olive brown

USCS: CL

CHECK
REVIEW
APPROVE

OCTOBER 2017 1649404

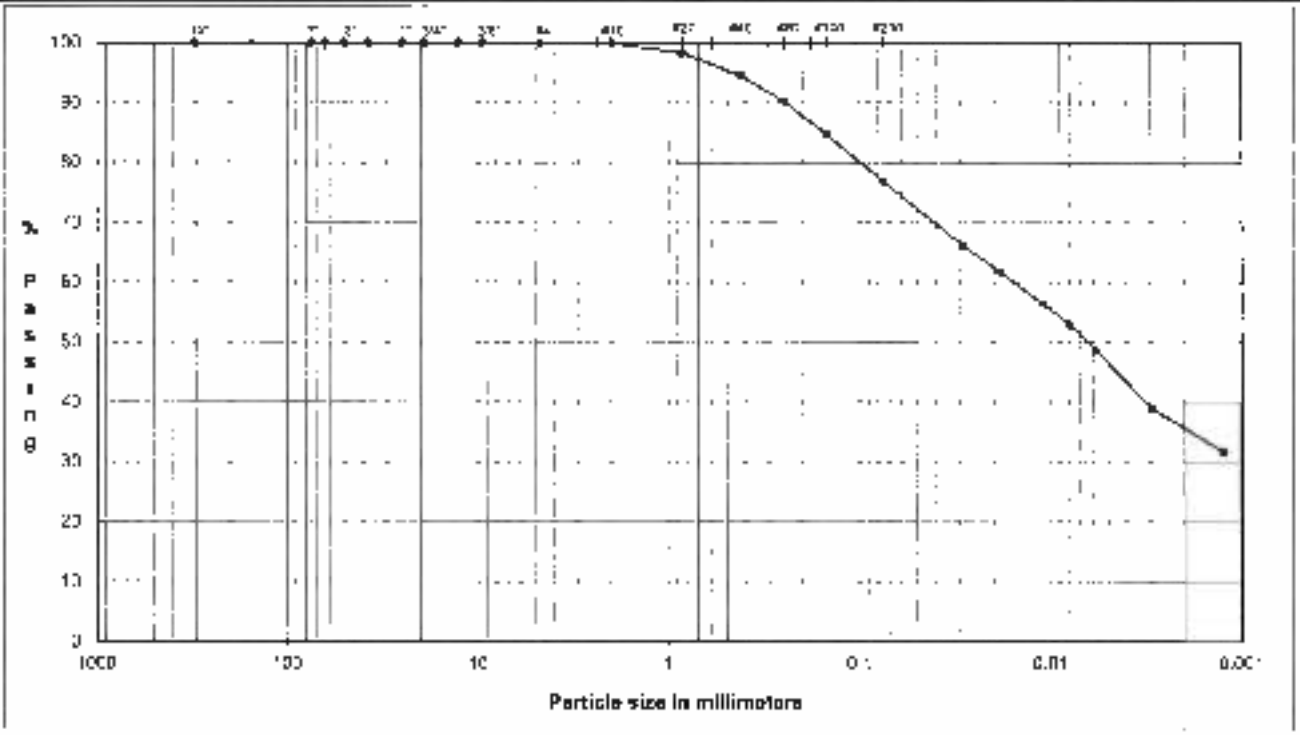
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CHROMOWPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BH-2 - Depth: 20.0-25.0'

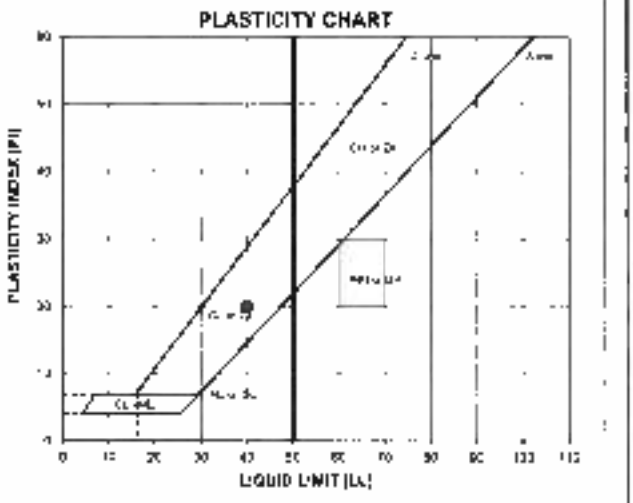
TYPE: Bulk



	Fines	Fine	Coarse	Medium	Fine	Silt or Clay
Classes						

U.S. Standard Sieves Sizes and Numbers	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.5"	304.8	100.0		
3"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2"	50.0	100.0		
1.5"	37.5	100.0		
1"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.5"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	99.9	Coarse Sand	0.1
#20	0.85	99.4		
#40	0.43	94.6	Medium Sand	5.3
#60	0.25	90.3		
#100	0.15	84.8		
#200	0.075	76.8	Fine Sand	13.5

Hydrometer Analysis	Particle Size (mm)	% Passing		
	0.039	66.2		
	0.019	61.4		
	0.011	58.5	Fines	
	0.0035	52.9	Silt or Clay	76.8
	0.0025	48.5		
	0.0015	38.8		
	0.0010	31.8		



ATTERBERG LIMITS

Method: B (Dry preparation)

PL	LL	PI	Fines	Sand/Gravel
21.1	49	28	26	0.37

DESCRIPTION: Sandy SILTY CLAY, fine to coarse, brown

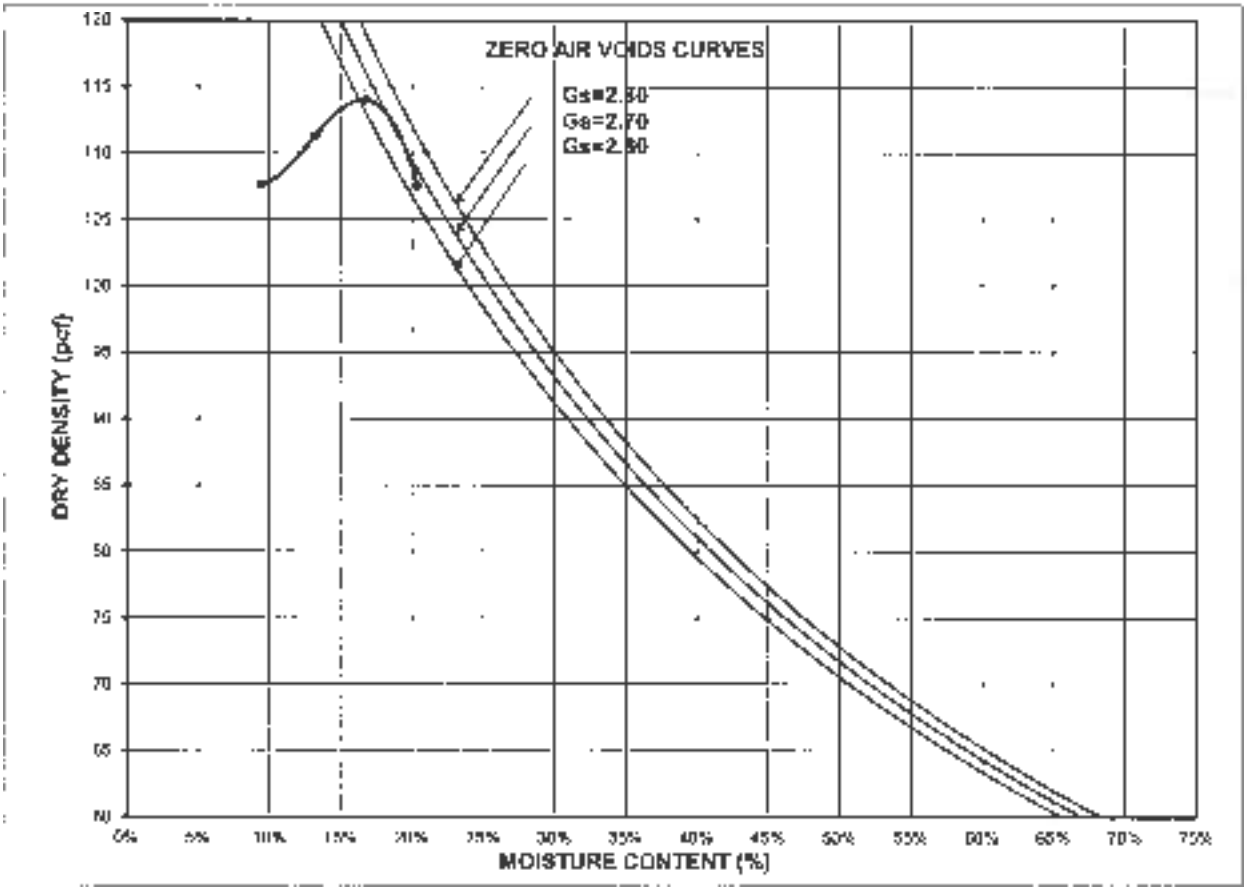
USCS: CL

LOGGED	
DATE	10/31/17
CHECK	
REVIEW	
APPROVE	

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Moist Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: BG-2 DEPTH: 20.0-25.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	107.6	9.4%
2	111.5	12.2%
3	114.0	16.7%
4	107.6	20.4%

Maximum Dry Density (pcf)	114.1
Optimum Moisture (%)	16.7
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	21.2%
% Retained on #4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: sandy SILTY CLAY, fine to coarse; brown.

USCS: CL

CHECK
REVIEW
APPROVE

OCTOBER 2017

1649494

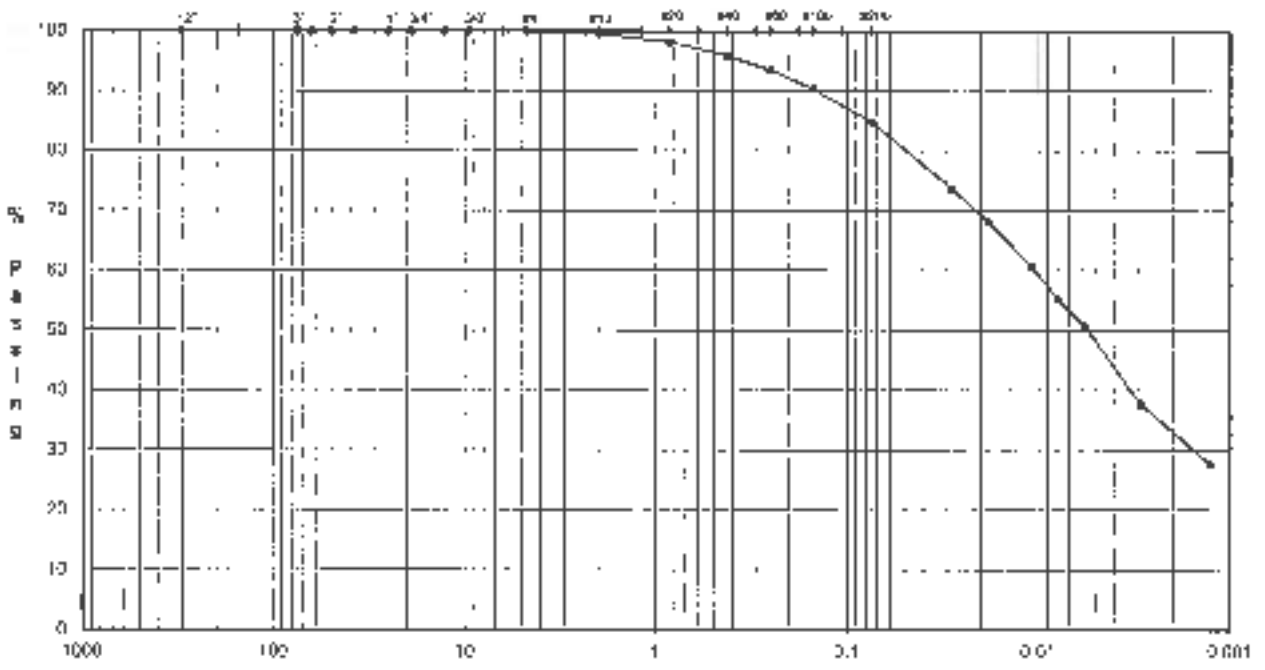
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-3 - Depth 5.0-14.0'

TYPE: Bulk



	Clays	Silt	Coarse	Medium	Fine	Silica Clay
COBBLES	GRAVEL		SAND			FINES

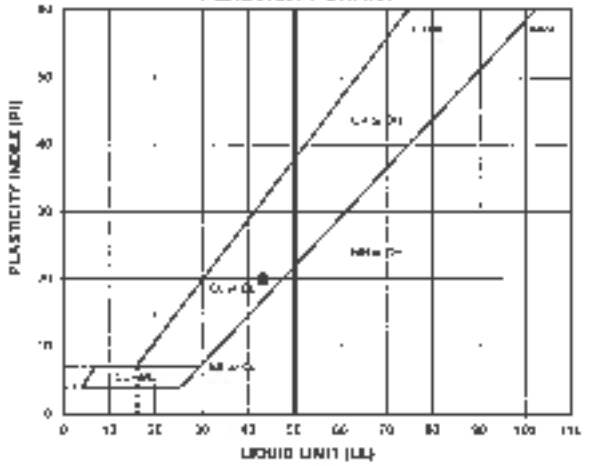
U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0	
5.0"	127.0	100.0	Cobbles	0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	99.5	Coarse Sand	0.5
#20	0.85	98.1	
#40	0.43	95.9	Medium Sand	2.6
#60	0.25	93.4	
#100	0.15	90.3	
#200	0.075	84.0	Fine Sand	31.0

Hydrometer Analysis

mm	% Finer		
0.028	73.6		
0.019	68.1		
0.011	60.7	Fines	
0.0079	54.2	Silt or Clay	44.9
0.0057	50.6		
0.0040	41.7		
0.0013	27.6		

PLASTICITY CHART



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	Fines	Activity
24.6	43	22	20	0.86

DESCRIPTION: Sandy SILTY CLAY, fine to coarse, olive brown.

USCS: CL

TECH: FTRH

DATE: 10/31/17

CHECK:

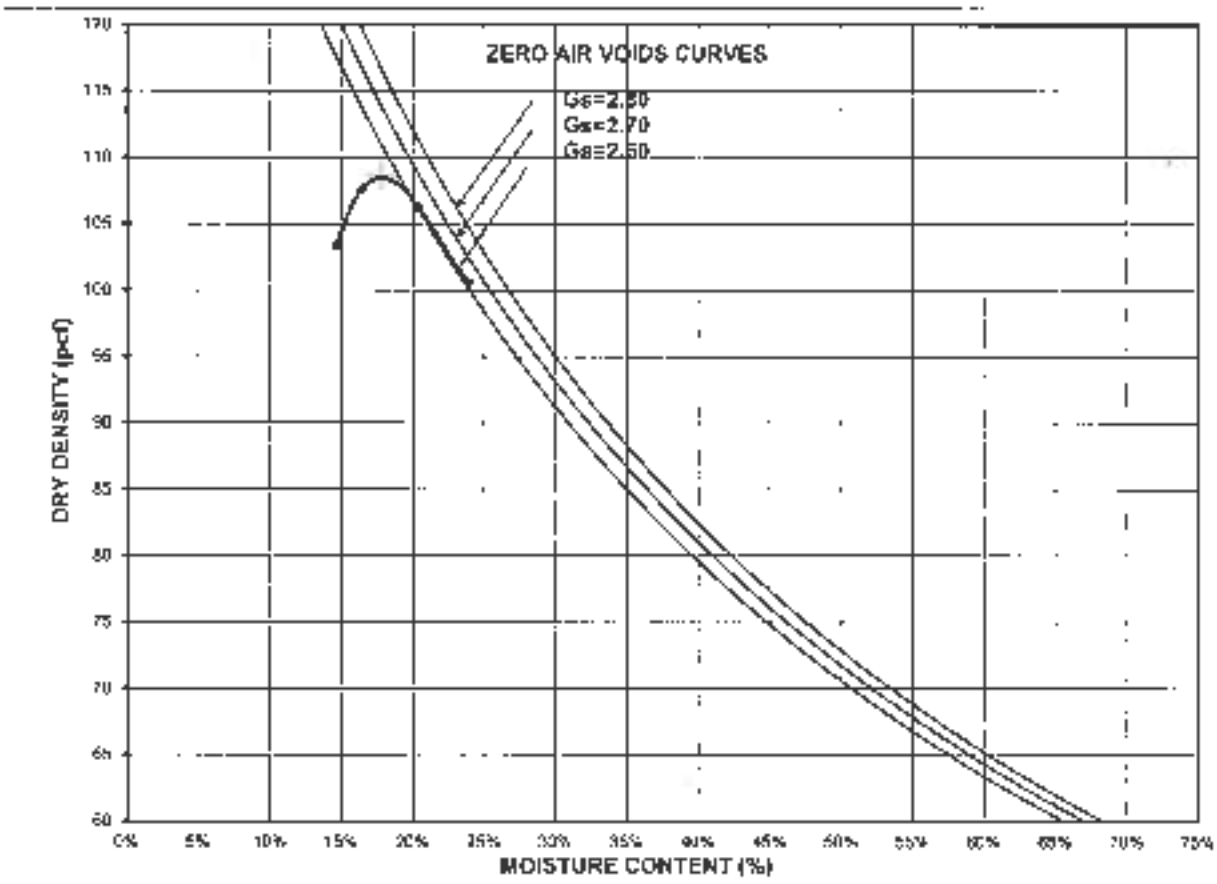
REVIEW:

APPROVE:

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Moist Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: BG-3 DEPTH 5.0-10.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	103.3	14.7%
2	107.6	16.5%
3	106.2	20.4%
4	100.6	23.9%

Maximum Dry Density (pcf)	108.6
Optimum Moisture (%)	17.8
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	24.6%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: sandy SILTY CLAY, fine to coarse; olive brown.

USCS: CL

CHECK
REVIEW
APPROVE

OCTOBER 2017

1649494

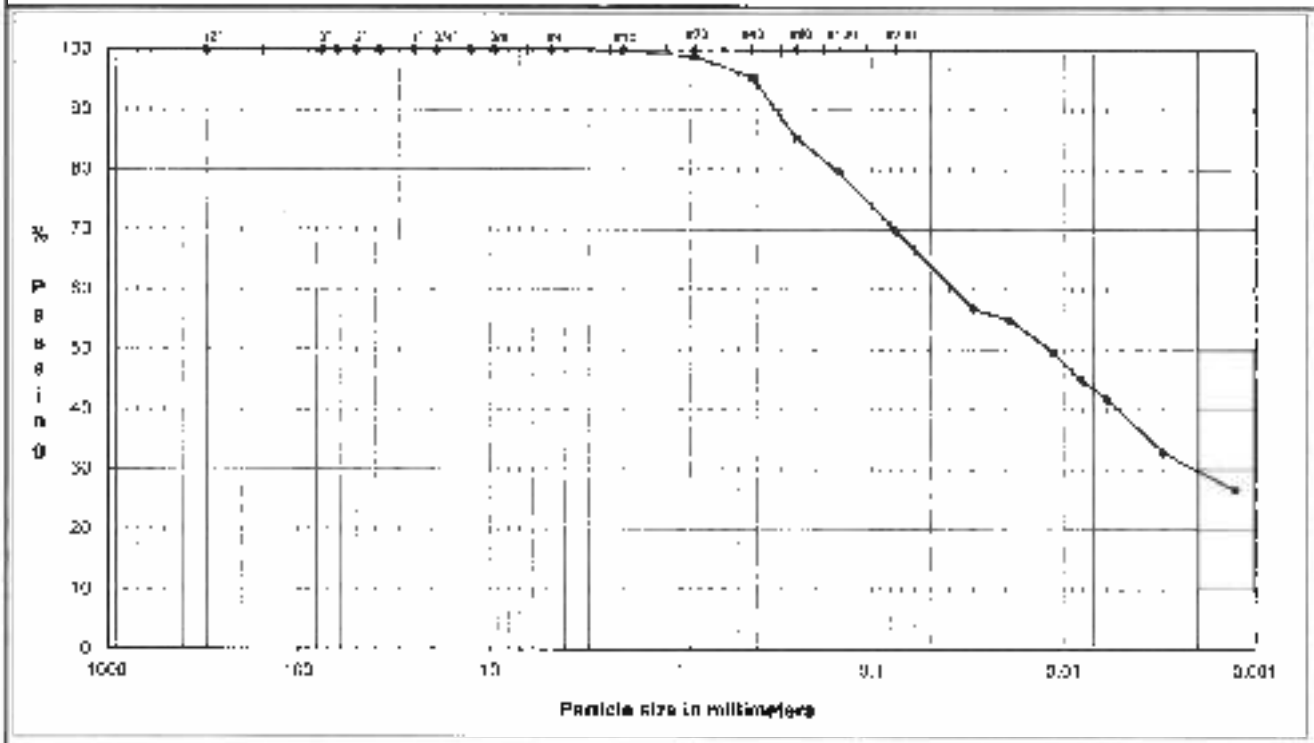
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA

SAMPLE ID: BG-3 Depth: 30.5-35.0'

TYPE: Bulk



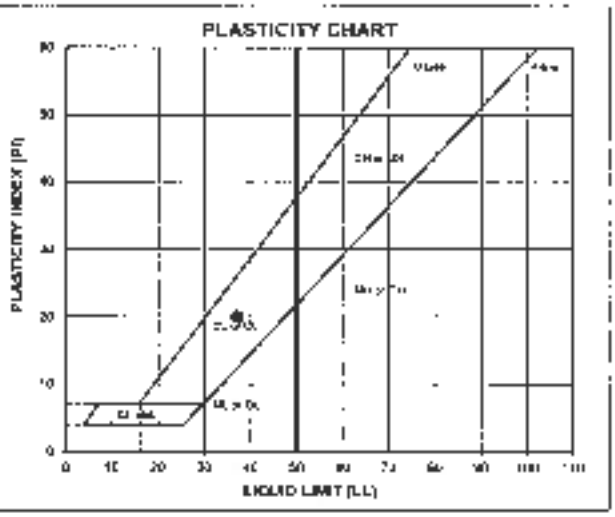
	Gravel	Sand	Silt	Clay
USCS %	GRAVEL	SAND	FINES	

U.S. Standard Sieve Sizes and Numbers

Particle Size (mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0	
3.0"	76.0	100.0	Cobble 0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel 0.0
#10	2.00	99.9	Coarse Sand 0.1
#20	0.84	99.8	
#40	0.43	95.4	Medium Sand 4.5
#60	0.25	85.3	
#100	0.15	79.6	
#200	0.075	69.8	Fine Sand 25.6

Hydrometer Analysis

Particle Size (mm)	% Finer	Classification	Percentage
0.030	56.8		
0.019	55.0		
0.011	49.7	Fines	
0.0067	45.2	Silt or Clay	69.8
0.0039	41.7		
0.0020	32.8		
0.0013	26.6		



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	PI	LI
17.5	37	17	20	0.00

LL oven dried / not oven dried

DESCRIPTION: sandy SILTY CLAY, fine to coarse, olive brown.

USCS: CL

TECH: TTRH

DATE: 10/17

CHECK:

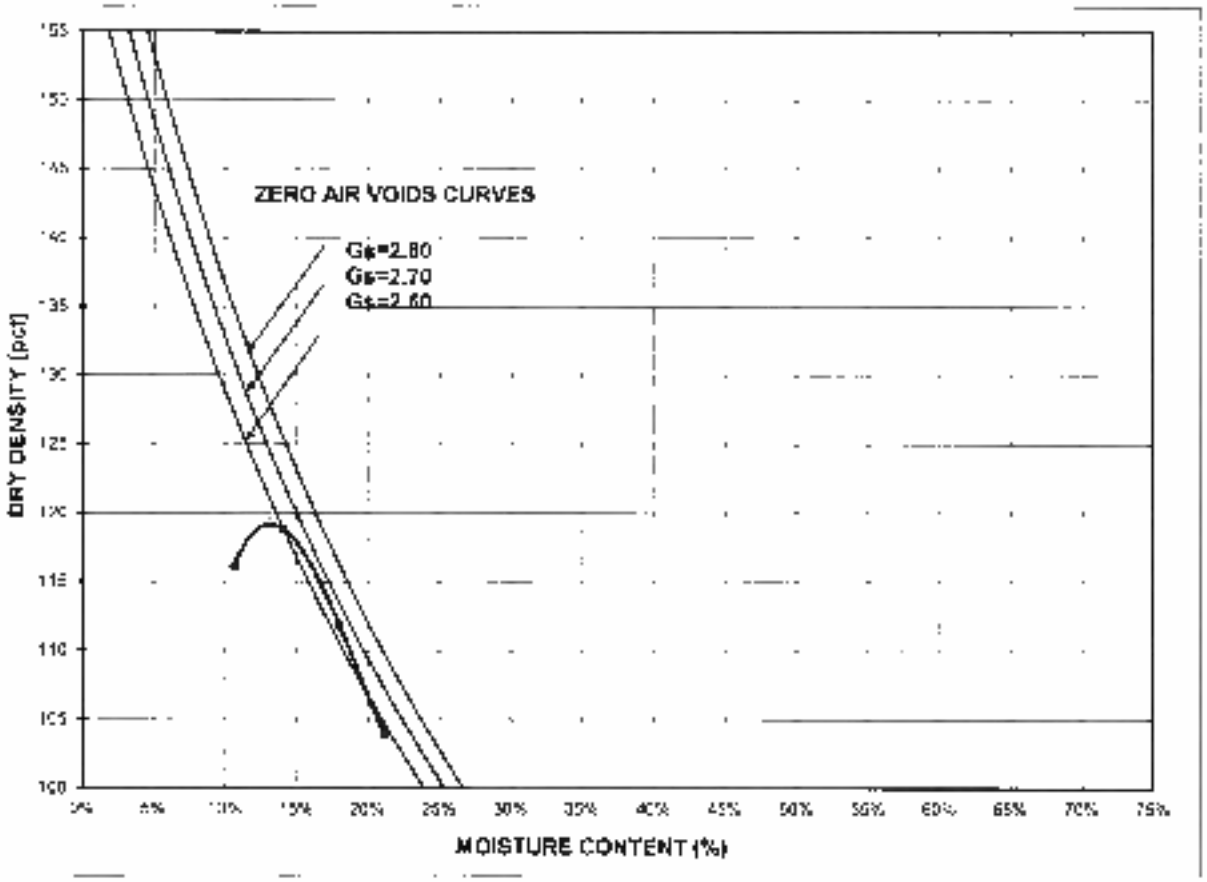
REVIEW:

APPROVE:

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Moist Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: HC-3 DEPTH 10.5-15.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	116.1	10.6%
2	118.5	14.1%
3	111.8	18.0%
4	104.0	21.2%

Maximum Dry Density (pcf)	119.0
Optimum Moisture (%)	13.2
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	17.5%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: Sandy SILTY CLAY, fine to coarse; olive brown.

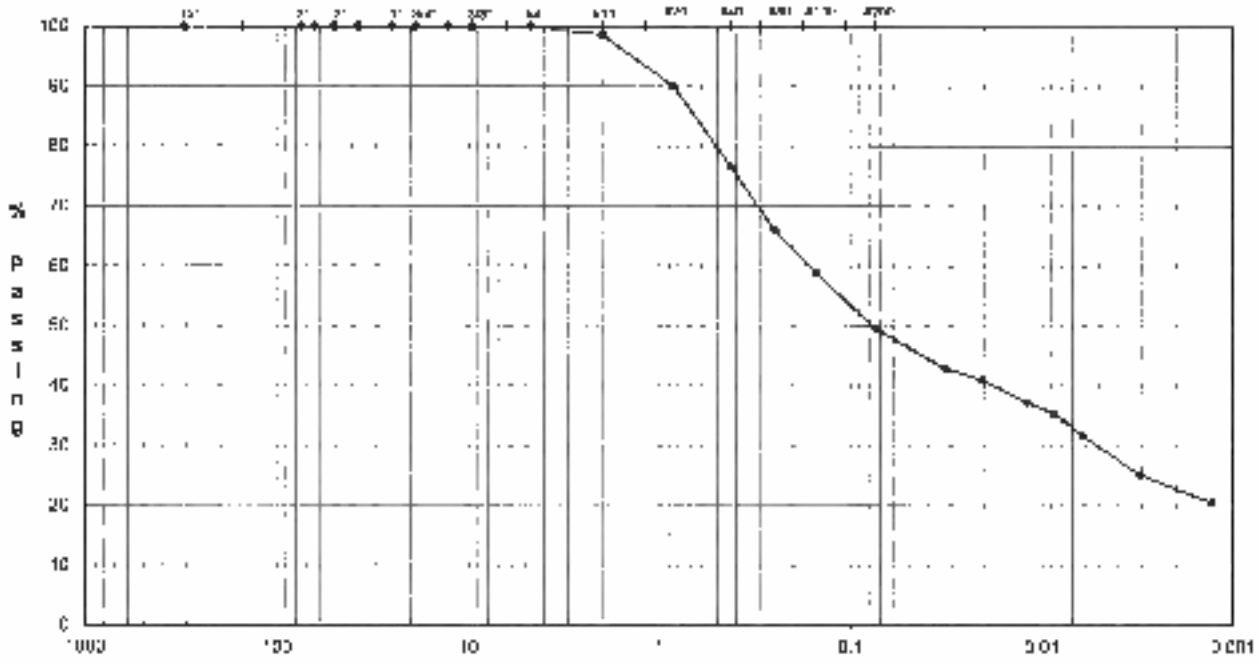
USCS: CL

CHECK:
REVIEW:
APPROVE:

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
SAMPLE ID: BG-3 Depth: 20.0-25.0'
TYPE: Bulk



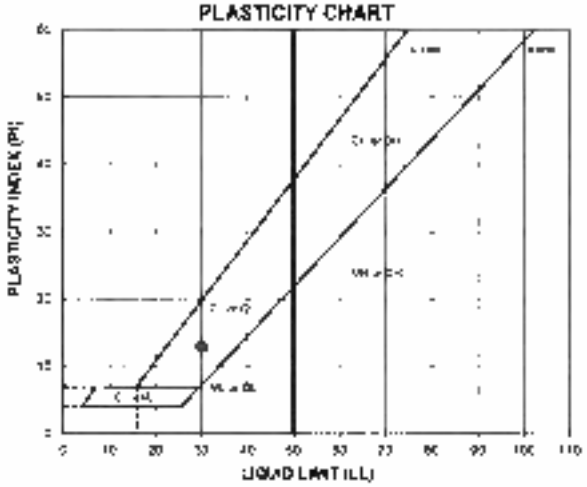
Particle size in millimeters

Gravel	Fine	Sand	Medium	Fine	Silt or Clay
Coarse	Gravel		Sand		

U.S. Standard Sieve Sizes and Numbers	Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.0"	304.8	100.0		
3.0"	76.2	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.8	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	98.6	Coarse Sand	1.4
#20	0.85	90.0		
#40	0.43	76.6	Medium Sand	22.1
#60	0.25	65.9		
#100	0.15	56.8		
#200	0.075	49.7	Fine Sand	26.9

Hydrometer Analysis	Size (mm)	% Finer		
	0.033	42.9		
	0.021	41.0		
	0.013	37.3	Fines	
	0.0066	35.4	Silt or Clay	49.7
	0.0062	31.7		
	0.0031	25.2		
	0.0013	20.5		

PLASTICITY CHART



ATTERBERG LIMITS

Method B (Dry preparation)

PL	LL	PI	PI	LL
20.0	30	37	13	[-0.5]

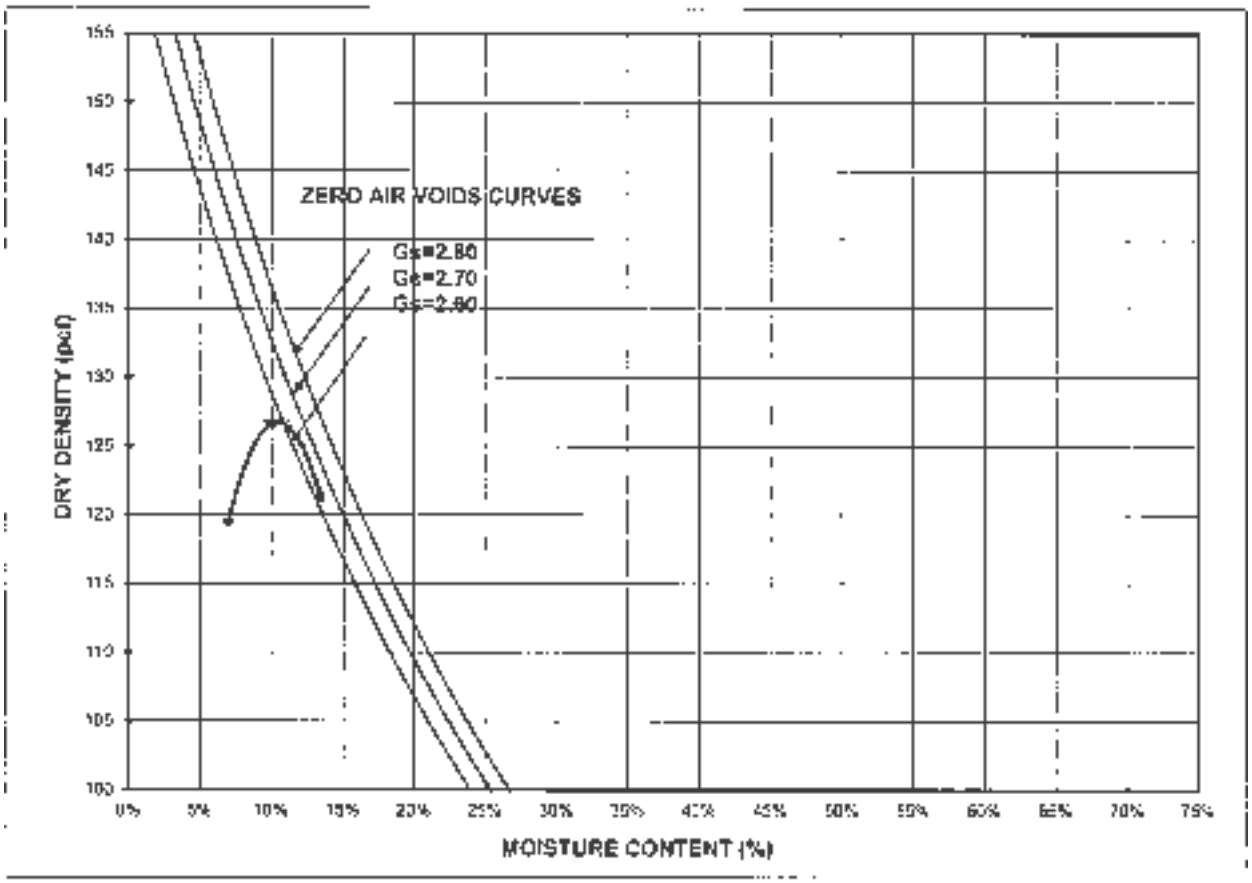
DESCRIPTION:	SAND and SILTY CLAY, fine to coarse, olive brown.
USCS:	SC

LOGGED	LMS
DATE	10/4/17
CHECK	
REVIEW	
APPROVE	

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Moist Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: BG-3 DEPTH 20.0-25.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	119.5	7.0%
2	126.0	10.0%
3	121.3	13.4%

Maximum Dry Density (pcf)	126.0
Optimum Moisture (%)	10.3
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	10.0%
% Retained on #4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: SAND and SILTY CLAY, fine to coarse, olive brown
USCS: SC

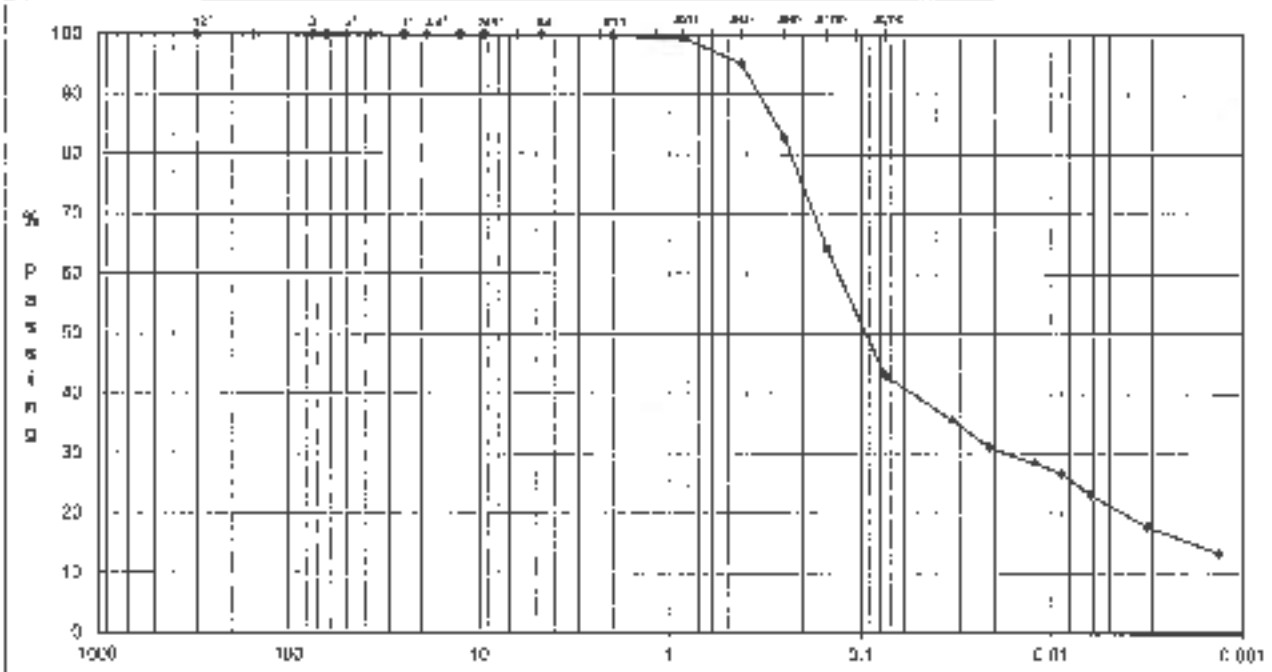
CHECK
REVIEW
APPROVE

OCTOBER 2017 | 1649494

PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING-CA
SAMPLE ID: P2-1 • Depth: 11.0-15.0'
TYPE: Bulk



Cobbles	Coarse	Fine	Coarse	Medium	Fine	Silt or Clay
	Gravel		Sand			Fines

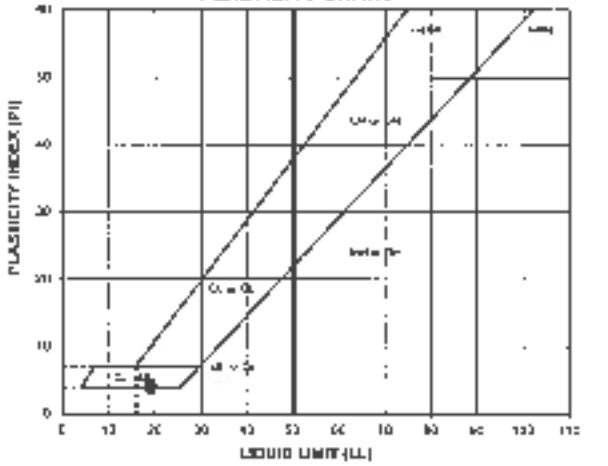
U.S. Standard Sieve Sizes and Numbers

Particle Size (mm)	% Passing	Particle Size Classification	Percentage
12.5"	304.8	100.0	
3.0"	76.0	100.0	Cobbles 0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel 0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel 0.0
#10	2.00	99.8	Coarse Sand 0.2
#20	0.85	99.3	
#40	0.43	95.2	Medium Sand 4.5
#60	0.25	81.0	
#100	0.15	64.3	
#200	0.075	43.0	Fine Sand 52.3

Hydrometer Analysis

Particle Size (mm)	% Finer	Classification	Percentage
0.002	36.5		
0.001	31.1		
0.001	28.4	Fines	
0.0009	26.7	Silt or Clay	43.0
0.0061	23.1		
0.0032	17.8		
0.0013	13.3		

PLASTICITY CHART



ATTERBERG LIMITS

Method -B (Dry preparation)

N_d	LL	PL	PI	CI
6.9	19	15	4	-2.36

LL [oven-dried] / [not dried]

DESCRIPTION: SAND and SILTY CLAY to CLAYEY SILT, fine to coarse, light olive brown.

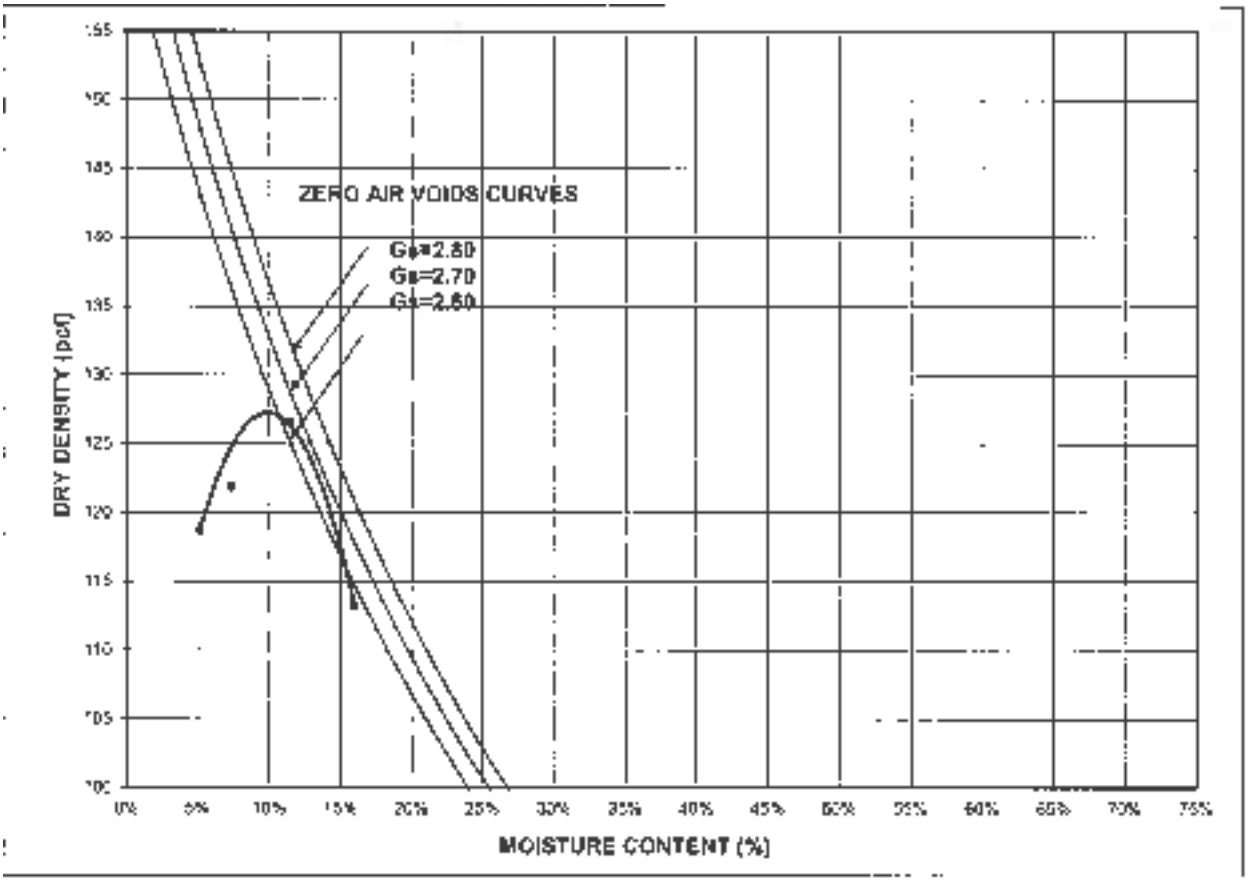
USCS: SC-SM

TECH	ET/RH
DATE	10/2017
CHECK	
REVIEW	
APPROVE	

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Moist Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: PZ-1 DEPTH: 11.0-15.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	118.7	5.1%
2	121.9	7.3%
3	126.5	11.0%
4	113.3	16.0%

Maximum Dry Density (pcf)	127.0
Optimum Moisture (%)	10.0
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	6.9%
% Retained on # 4 sieve	0.0%
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION SAND and SILTY CLAY to CLAYEY SILT, fine to coarse; light olive brown.

USCS SC SM

CHECK
REVIEW
APPROVE

OCTOBER 2017

1649494

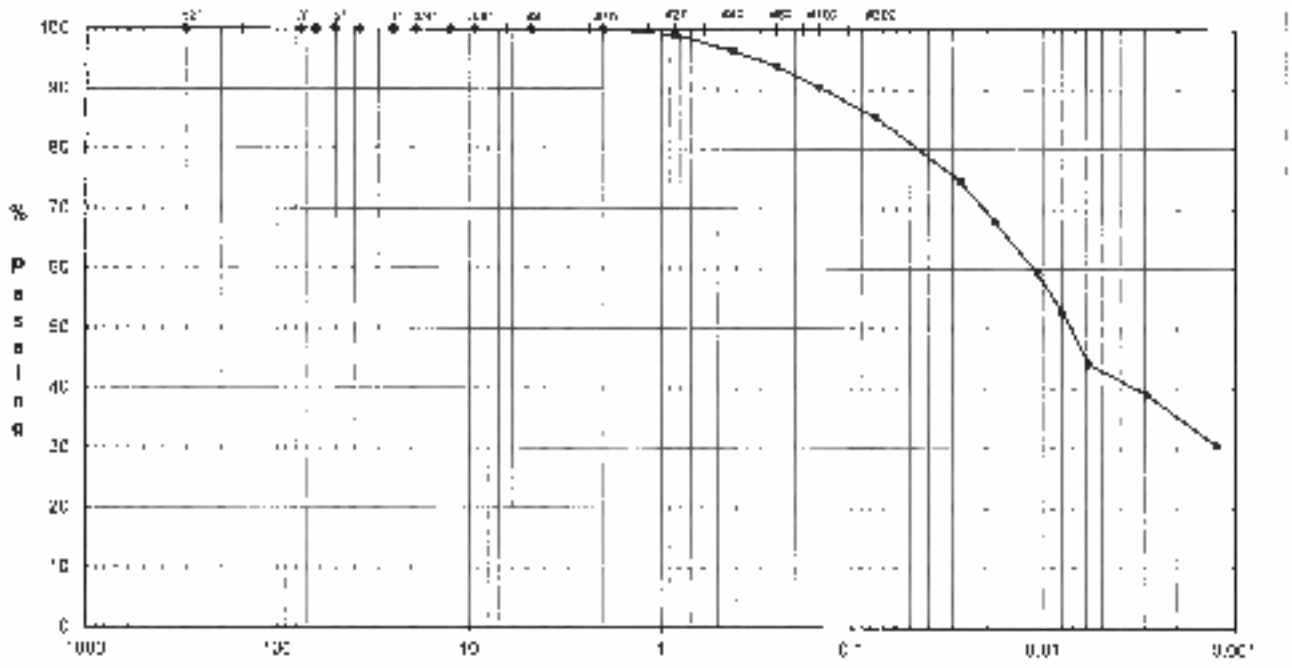
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CH2M-WPWMA PLANNING & PERMITTING-CA

SAMPLE ID: PZ-1 - Depth 15.0-30.0'

TYPE: Bulk

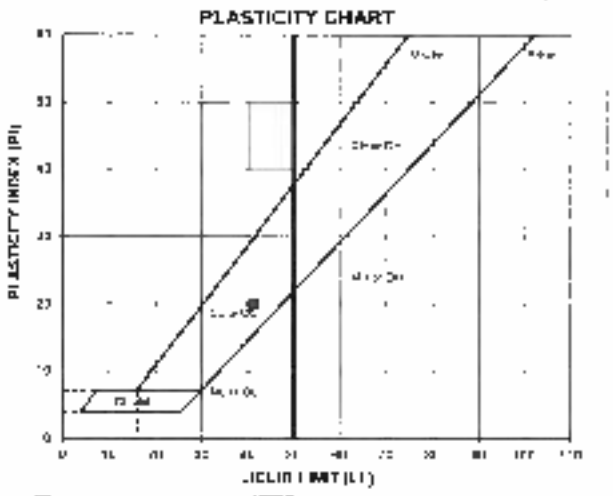


Particle size in millimeters

	Gravel	Sand	Fines
COBBLES	Coarse / Fine	Coarse / Medium / Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers	Particle Size (mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0		
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0		
2.0"	50.8	100.0		
1.5"	37.5	100.0		
1.0"	25.0	100.0		
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0		
0.375"	9.5	100.0		
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	100.0	Coarse Sand	0.0
#20	0.85	99.1		
#40	0.42	96.5	Medium Sand	3.5
#60	0.25	93.9		
#100	0.15	90.4		
#200	0.075	85.1	Fine Sand	11.2

Hydrometer Analysis	Particle Size (mm)	% Finer	Classification	Percentage
	0.022	74.7		
	0.014	67.9		
	0.010	59.4	Fines	
	0.0079	52.6	Silt or Clay	85.2
	0.0058	44.1		
	0.0039	39.0		
	0.0013	30.6		



ATTERBERG LIMITS

Method -B (Dry preparation)

Ss	LL	PL	PI	LI
28.2	41	21	20	0.35

DESCRIPTION: sandy SILTY CLAY, fine to medium; olive brown

USCS: CL

LL (re-evaluated)

PI (re-evaluated)

TECH FT/DH

DATE 10/2/17

CHECK

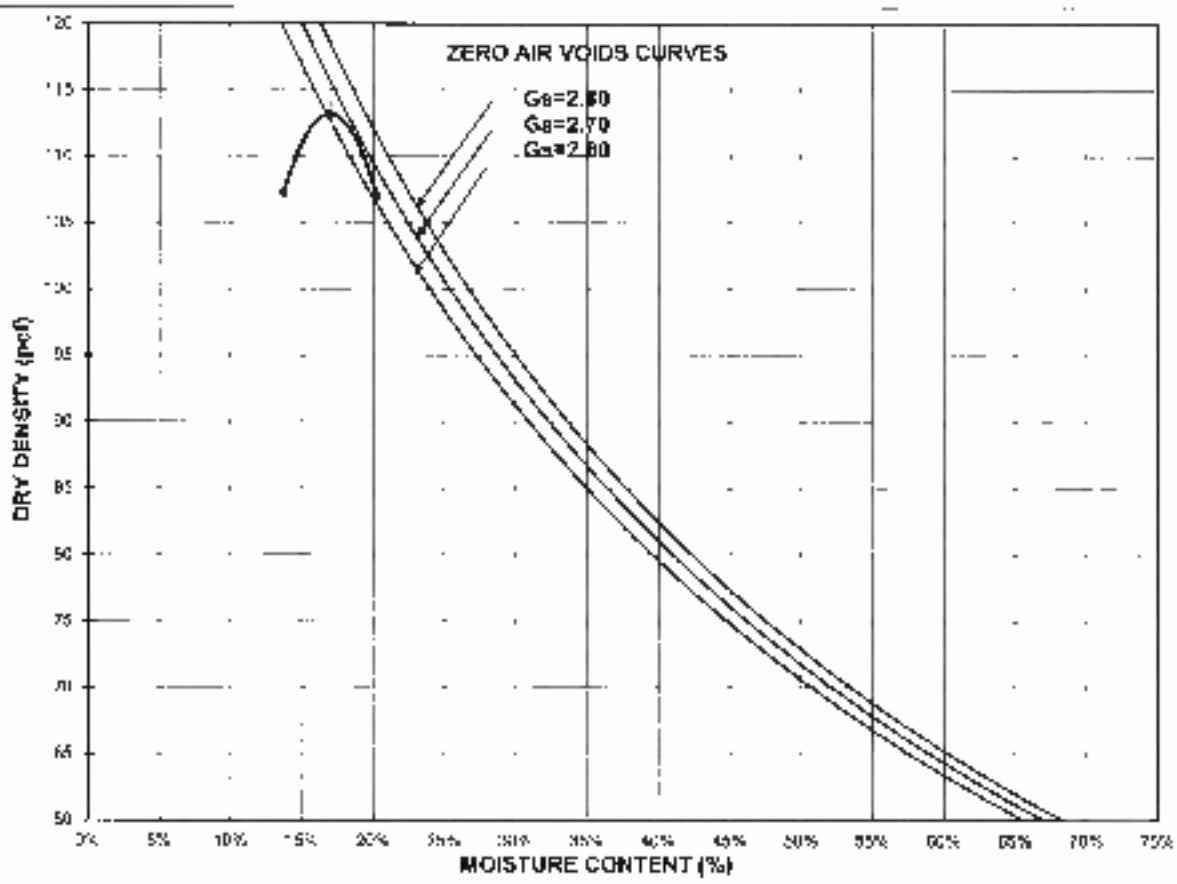
REVIEW

APPROVE

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Dry Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: PZ-1 DEPTH: 15.0-30.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	107.3	13.7%
2	113.2	16.8%
3	106.9	20.2%

Maximum Dry Density (pcf)	113.5
Optimum Moisture (%)	17.0
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content:	28.3%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION: sandy SILTY CLAY, fine to medium; olive brown.

USCS: CL

CHECK
REVIEW
APPROVE:

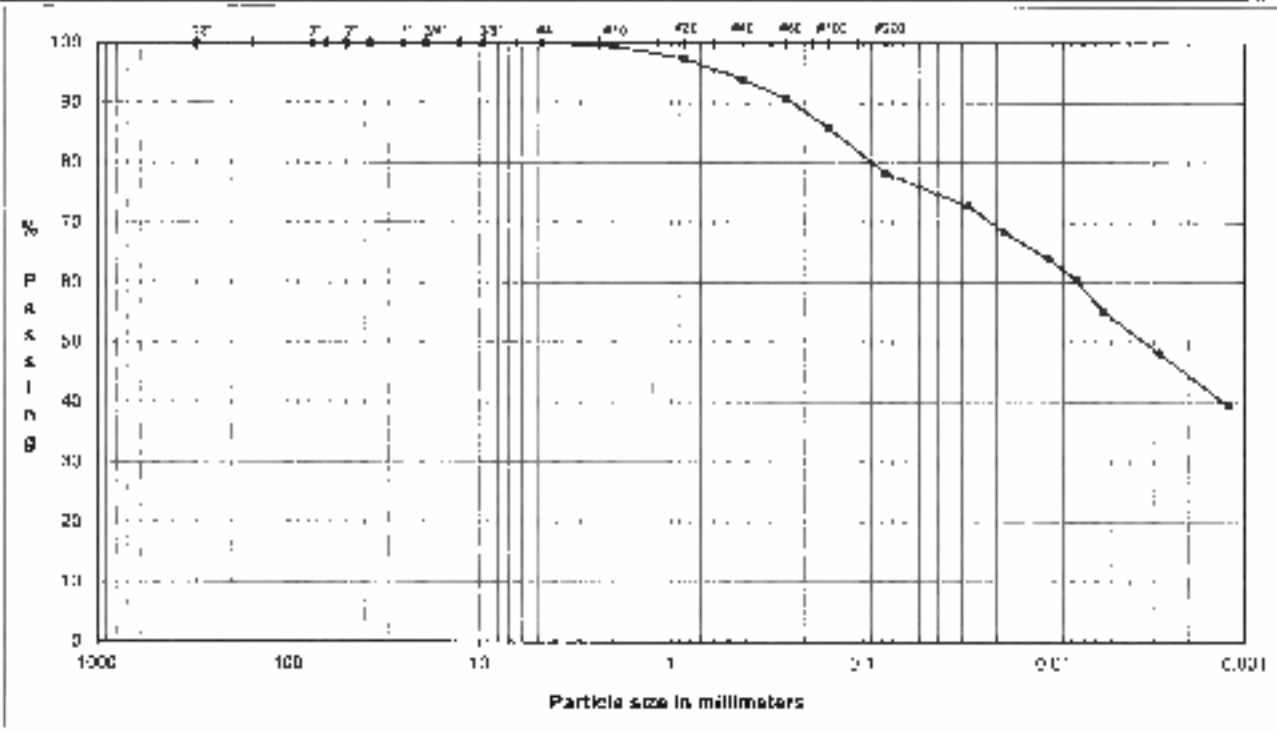
PARTICLE SIZE DISTRIBUTION & ATTERBERG LIMITS

ASTM D421, D422, D4318

PROJECT NAME: CHEMOWPWMA PLANNING & PERMITTING/CA

SAMPLE ID: PZ-2 - Depth 40.0-45.0'

TYPE Bulk



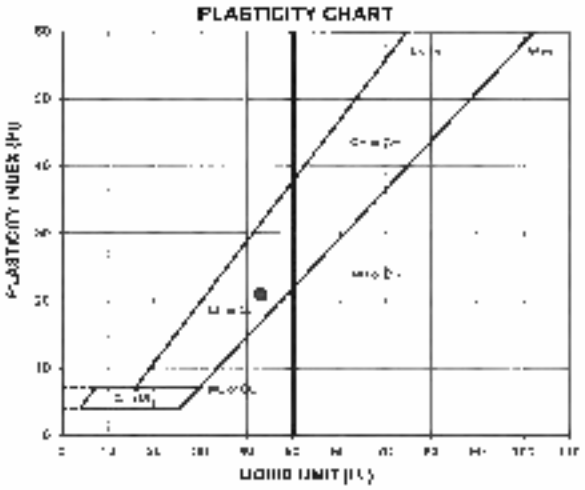
COBBLES	GRAVEL	SAND	FINES
	Coarse / Fine / Coarse	Medium / Fine	Silt or Clay

U.S. Standard Sieves Sizes and Numbers

Particle Size (mm)	% Passing	Classification	Percentage
12.0"	304.8	100.0	
3.0"	75.0	100.0	Cobbles	0.0
2.5"	63.5	100.0	
2.0"	50.0	100.0	
1.5"	37.5	100.0	
1.0"	25.0	100.0	
0.75"	19.0	100.0	Coarse Gravel	0.0
0.50"	12.7	100.0	
0.375"	9.5	100.0	
#4	4.8	100.0	Fine Gravel	0.0
#10	2.00	98.6	Coarse Sand	0.4
#20	0.85	97.4		
#40	0.43	93.9	Medium Sand	4.6
#60	0.25	92.1		
#100	0.15	85.8		
#200	0.075	78.2	Fine Sand	15.7

Hydrometer Analysis

Grain Size (mm)	% Finer		
0.028	72.8		
0.013	68.4		
0.011	64.8	Fines	
0.0057	60.5	Silt or Clay	78.2
0.0036	55.2		
0.0028	48.2		
0.0012	39.6		



ATTERBERG LIMITS

Method -B (Dry preparation)

PL	LL	PI	PI	LL
22.3	43	22	21	0.35

DESCRIPTION: sandy SILTY CLAY, fine to coarse; light brown

USCS: CL

TECH: RHH

DATE: 10/31/17

CHECK:

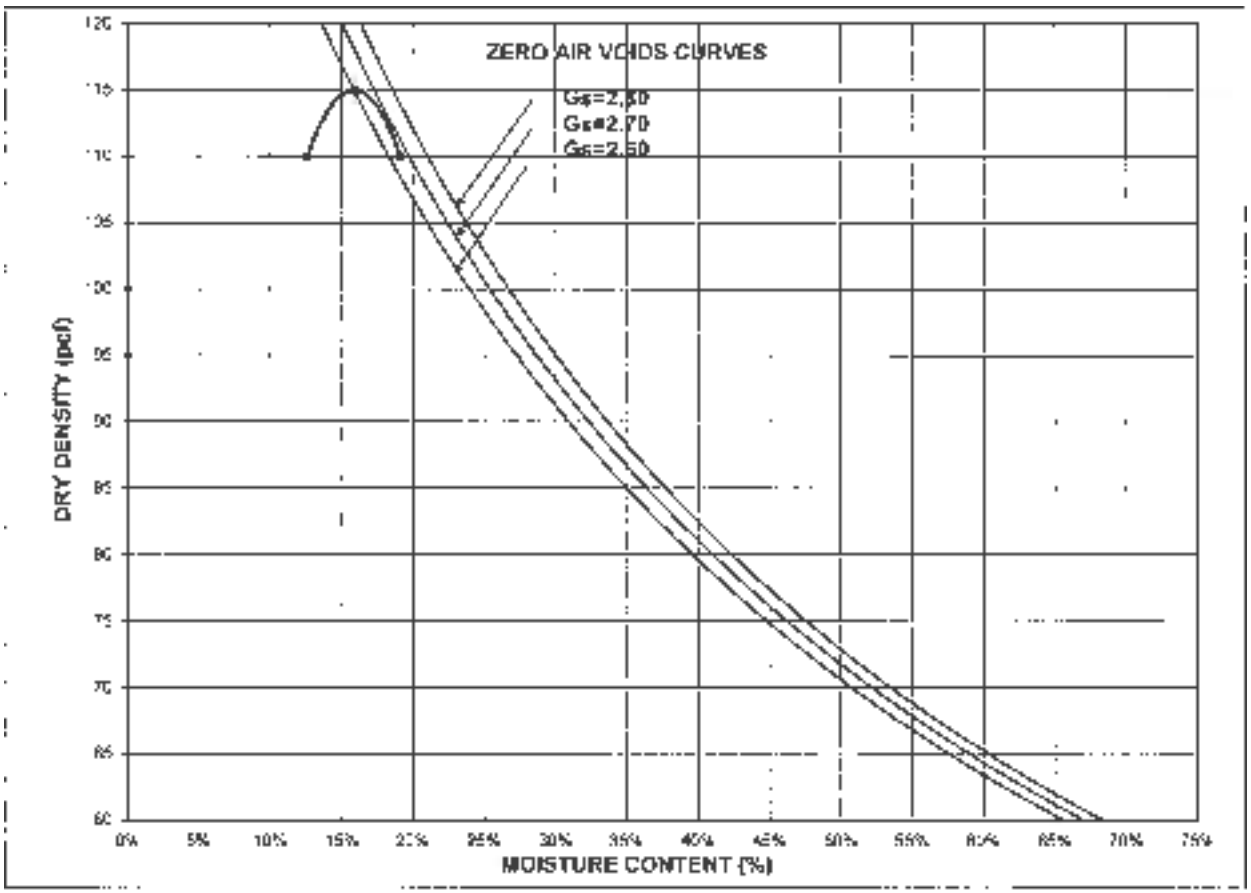
REVIEW:

APPROVE:

MOISTURE / DRY DENSITY CURVE
ASTM D 1557 Method A

Mechanical	Modified	Dry Method

PROJECT NAME: CH2M/WPWMA PLANNING & PERMITTING/CA
PROJECT NUMBER: 1649494
SAMPLE ID: PZ-2 DEPTH: 40.0-45.0' SAMPLE TYPE: Bulk



COMPACTION POINTS		
Specimen Number	Dry Density (pcf)	Moisture Content (%)
1	109.9	12.5%
2	115.0	15.8%
3	110.0	19.2%

Maximum Dry Density (pcf)	115.0
Optimum Moisture (%)	15.9
Corrected Maximum Dry Density (pcf)	
Corrected Optimum Moisture (%)	
As-Received Moisture Content	25.3%
% Retained on # 4 sieve	
% Retained on 3/8" sieve	
% Retained on 3/4" sieve	

DESCRIPTION sandy SILTY CLAY, fine to coarse, light brown.

USCS CL

CHECK
REVIEW
APPROVE

FLEXIBLE WALL PERMEABILITY
ASTM D 5084
METHOD D, CONSTANT RATE OF FLOW

PROJECT TITLE	CHEMOURS/FAYA PLANNING & PERMITTING/CA		Board #	4	
PROJECT NUMBER	1649494		Flow Pump	2	
SAMPLE ID	B41-1	25.0-40.0'	Flow Pump Speed	8	
SAMPLE TYPE	Bulk		Deflection	NOM	

COMMENTS: The sample was remolded to 90.2% of the Maximum Dry Density and OPTM + 1.9% (using ASTM D 1557).

Sample Data, Initial				Sample Data, Final	
Height, inches	2.994	B-Value, f	0.97	Height, inches	3.066
Diameter, inches	2.791	Cell Pres.	90.0	Diameter, inches	2.807
Area, cm²	39.44	Bot. Pres.	80.0	Area, cm²	39.92
Volume, cm³	299.95	Top Pres.	80.0	Volume, cm³	310.92
Mass, g	561.17	Tot. B.P.	80.0	Mass, g	609.66
Moisture Content, %	18.12	Head, max.	146.31	Moisture Content, %	28.33
Dry Density, pcf	98.83	Head, min.	146.31	Dry Density, pcf	95.35
Spec. Gravity (assumed)	2.700	Max. Grad.	18.79	Volume Solids, cm³	175.95
Volume Solids, cm³	175.95	Min. Grad.	18.79	Volume Voids, cm³	134.97
Volume Voids, cm³	124.00			Void Ratio	0.77
Void Ratio	0.70			Saturation, %	99.7%
Saturation, %	69.4%				

Flow Pump Rate: 1.02E-04 cm³/sec

USCS: CL

WATER CONTENTS		Sample Initial	Sample Final
Wt Soil & Tare, i	g	561.17	620.09
Wt Soil & Tare, f	g	475.08	485.56
Wt Tare	g	0.00	10.67
Wt Moisture Lost	g	86.09	134.53
Wt Dry Soil	g	475.08	474.89
Water Content	%	18.12%	28.33%

DESCRIPTION: sandy SILTY CLAY, fine to coarse; brown.

TIME FUNCTIONS, SECONDS								dP				
DATE	DAY	HOUR	MIN	TEMP (°C)	dt (min)	dt,acc (min)	dt (sec)	dt,acc (sec)	Reading (psi)	Head (cm)	Gradient	Permeability (cm/sec)
10/16/17	43024	8	10	20.0	0	0	0	0	2.08	146.31	18.79	1.5E-07
10/16/17	43024	8	15	20.0	5	5	300	300	2.08	146.31	18.79	1.5E-07
10/16/17	43024	8	20	20.0	5	10	300	600	2.08	146.31	18.79	1.5E-07
10/16/17	43024	8	25	20.0	5	15	300	900	2.08	146.31	18.79	1.5E-07 *
10/16/17	43024	8	30	20.0	5	20	300	1200	2.08	146.31	18.79	1.5E-07 *
10/16/17	43024	8	35	20.0	5	25	300	1500	2.08	146.31	18.79	1.5E-07 *
10/16/17	43024	8	40	20.0	5	30	300	1800	2.08	146.31	18.79	1.5E-07 *

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS ** 1.5E-07 cm/sec **

DATE 10/16/17
CHECK
REVIEW
APPROVE

FLEXIBLE WALL PERMEABILITY
ASTM D 5084
METHOD D, CONSTANT RATE OF FLOW

PROJECT TITLE	CH2M-WPWMA PLANNING & PERMITTING-CA	Board #	5
PROJECT NUMBER	1649494	Flow Pump	2
SAMPLE ID	BG-2	20.0-25.0'	Flow Pump Speed	9
SAMPLE TYPE	Bulk	Technician	SDM

COMMENTS: The sample was remolded to 90.4% of the Maximum Dry Density and OPTM + 2.0% (using ASTM D 1557).

Sample Data, Initial				Sample Data, Final	
Height, inches	3.005	B-Value, F	0.98	Height, inches	3.084
Diameter, inches	2.790	Cell Pres.	90.0	Diameter, inches	2.821
Area, cm²	39.44	Bot. Pres.	80.0	Area, cm²	40.32
Volume, cm³	301.05	Top Pres.	80.0	Volume, cm³	315.87
Mass, g	590.37	Tot. B.P.	80.0	Mass, g	628.38
Moisture Content, %	18.66	Head, max.	175.85	Moisture Content, %	26.29
Dry Density, pcf	103.12	Head, min.	175.85	Dry Density, pcf	98.28
Spec. Gravity (assumed)	2.700	Max. Grad.	22.36	Volume Solids, cm³	184.27
Volume Solids, cm³	184.27	Min. Grad.	22.36	Volume Voids, cm³	131.61
Volume Voids, cm³	116.79			Void Ratio	0.71
Void Ratio	0.63			Saturation, %	99.4%
Saturation, %	79.5%				

WATER CONTENTS		Sample Initial	Sample Final
Wt Soil & Tare, i	g	590.37	636.58
Wt Soil & Tare, f	g	497.52	506.13
Wt Tare	g	0.00	8.78
Wt Moisture Lost	g	92.85	130.05
Wt Dry Soil	g	497.52	497.35
Water Content	%	18.66%	26.29%

DESCRIPTION: sandy SILTY CLAY, fine to coarse; brown

Flow Pump Rate: 4.26E-05 cm³/sec USCS: CL

TIME FUNCTIONS, SECONDS								dP					
DATE	DAY	HOUR	MIN	TEMP (°C)	dt (min)	dt,acc (min)	dt (sec)	dt,acc (sec)	Reading (psi)	Head (cm)	Gradient	Permeability (cm/sec)	
10/16/17	43024	8	50	20.0	0	0	0	0	2.49	175.85	22.36	4.7E-08	
10/16/17	43024	8	55	20.0	5	5	300	300	2.49	175.85	22.36	4.7E-08	
10/16/17	43024	9	0	20.0	5	10	300	600	2.49	175.85	22.36	4.7E-08	
10/16/17	43024	9	5	20.0	5	15	300	900	2.49	175.85	22.36	4.7E-08	*
10/16/17	43024	9	10	20.0	5	20	300	1200	2.49	175.85	22.36	4.7E-08	*
10/16/17	43024	9	15	20.0	5	25	300	1500	2.49	175.85	22.36	4.7E-08	*
10/16/17	43024	9	20	20.0	5	30	300	1800	2.49	175.85	22.36	4.7E-08	*

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS **: 4.7E-08 cm/sec **

DATE: 10/16/17
CHECK:
REVIEW:
APPROVE:

FLEXIBLE WALL PERMEABILITY
ASTM D 5084
METHOD D, CONSTANT RATE OF FLOW

PROJECT TITLE	CH2M/WPWMA PLANNING & PERMITTING/CA	Board #	6
PROJECT NUMBER	1649494	Flow Pump	2
SAMPLE ID	BG-3	5.0-10.0'	Flow Pump Speed	8
SAMPLE TYPE	Bulk	Technician	SDM

COMMENTS: The sample was remolded to 89.8% of the Maximum Dry Density and OPTM + 2.7% (using ASTM D 1557).

Sample Data, Initial				Sample Data, Final	
Height, inches	3.801	B-Value, f	0.99	Height, inches	3.070
Diameter, inches	2.790	Cell Pres.	90.0	Diameter, inches	2.816
Area, cm²	39.44	Bot. Pres.	80.0	Area, cm²	40.18
Volume, cm³	300.65	Top Pres.	80.0	Volume, cm³	313.33
Mass, g	565.71	Tot. B.P.	80.0	Mass, g	610.81
Moisture Content, %	20.49	Head, max.	135.05	Moisture Content, %	30.16
Dry Density, pcf	97.45	Head, min.	135.05	Dry Density, pcf	93.59
Spec. Gravity (assumed)	2.750	Max. Grad.	17.32	Volume Solids, cm³	170.73
Volume Solids, cm³	170.73	Min. Grad.	17.32	Volume Voids, cm³	142.59
Volume Voids, cm³	129.92			Void Ratio	0.84
Void Ratio	0.76			Saturation, %	99.1%
Saturation, %	74.0%				

WATER CONTENTS		Sample Initial	Sample Final
Wt Soil & Tare, i	g	565.71	619.87
Wt Soil & Tare, f	g	469.51	477.92
Wt Tare	g	0.00	8.58
Wt Moisture Lost	g	96.20	141.25
Wt Dry Soil	g	469.51	469.34
Water Content	%	20.49%	30.10%

Flow Pump Rate: 1.12E-04 cm³/sec

USCS: CL

DESCRIPTION: sandy SILTY CLAY, fine to coarse; olive brown.

TIME FUNCTIONS, SECONDS								dP				
DATE	DAY	HOUR	MIN	TEMP (°C)	dt (min)	t,acc (min)	dt (sec)	dt,acc (sec)	Reading (psi)	Head (cm)	Gradient	Permeability (cm/sec)
10/16/17	43024	10	0	20.0	0	0	0	0	1.92	135.05	17.32	1.6E-07
10/16/17	43024	10	5	20.0	5	5	300	300	1.92	135.05	17.32	1.6E-07
10/16/17	43024	10	10	20.0	5	10	300	600	1.92	135.05	17.32	1.6E-07
10/16/17	43024	10	15	20.0	5	15	300	900	1.92	135.05	17.32	1.6E-07 *
10/16/17	43024	10	20	20.0	5	20	300	1200	1.92	135.05	17.32	1.6E-07 *
10/16/17	43024	10	25	20.0	5	25	300	1500	1.92	135.05	17.32	1.6E-07 *
10/16/17	43024	10	30	20.0	5	30	300	1800	1.92	135.05	17.32	1.6E-07 *

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS ** 1.6E-07 cm/sec **

DATE: 10/16/17
CHECK:
REVIEW:
APPROVE:

FLEXIBLE WALL PERMEABILITY
ASTM D 5084
METHOD D, CONSTANT RATE OF FLOW

PROJECT TITLE	CHEMOPWMA PLANNING & PERMITTING/CA		Board #	15	
PROJECT NUMBER	1649494		Flow Pump	2	
SAMPLE ID	PZ-1	15.0-30.0'	Flow Pump Speed	9	
SAMPLE TYPE	Bulk		Technician	SDM	

COMMENTS: The sample was remolded to 90.8% of the Maximum Dry Density and OPTM. +1.3% (using ASTM D 1557).

Sample Data, Initial			
Height, inches	3.000	B-Value, f	1.00
Diameter, inches	2.790	Cell Pres.	90.0
Area, cm²	39.44	Bot. Pres.	89.0
Volume, cm³	300.56	Top Pres.	89.0
Mass, g	585.57	Eff. B.P.	88.0
Moisture Content, %	18.26	Head, max.	164.60
Dry Density, pcf	103.80	Head, min.	164.60
Spec. Gravity (assumed)	2.700	Max. Grad.	21.24
Volume Solids, cm³	183.39	Min. Grad.	21.24
Volume Voids, cm³	117.16		
Void Ratio	0.64		
Saturation, %	77.2%		

Sample Data, Final	
Height, inches	3.051
Diameter, inches	2.816
Area, cm²	40.18
Volume, cm³	311.39
Mass, g	622.31
Moisture Content, %	25.68
Dry Density, pcf	99.23
Volume Solids, cm³	183.39
Volume Voids, cm³	128.00
Void Ratio	0.70
Saturation, %	99.3%

WATER CONTENTS		Sample Initial	Sample Final
Wt Soil & Tare, i	g	585.57	630.55
Wt Soil & Tare, f	g	495.15	503.43
Wt Tare	g	0.00	8.43
Wt Moisture Lost	g	90.42	127.12
Wt Dry Soil	g	495.15	495.00
Water Content	%	18.26%	25.68%

Flow Pump Rate: 4.26E-05 cm³/sec

USCS: CL

DESCRIPTION: sandy SILTY CLAY, fine to medium; olive brown.

TIME FUNCTIONS, SECONDS								dP				
DATE	DAY	HOUR	MIN	TEMP (°C)	dt (min)	dt,acc (min)	dt (sec)	dt,acc (sec)	Reading (psi)	Head (cm)	Gradient	Permeability (cm/sec)
10/16/17	43024	10	45	20.0	0	0	0	0	2.34	164.60	21.24	5.0E-08
10/16/17	43024	10	50	20.0	5	5	300	300	2.34	164.60	21.24	5.0E-08
10/16/17	43024	10	55	20.0	5	10	300	600	2.34	164.60	21.24	5.0E-08
10/16/17	43024	11	0	20.0	5	15	300	900	2.34	164.60	21.24	5.0E-08 *
10/16/17	43024	11	5	20.0	5	20	300	1200	2.34	164.60	21.24	5.0E-08 *
10/16/17	43024	11	10	20.0	5	25	300	1500	2.34	164.60	21.24	5.0E-08 *
10/16/17	43024	11	15	20.0	5	30	300	1800	2.34	164.60	21.24	5.0E-08 *

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS **: 5.0E-08 cm/sec **

DATE: 10/16/17
CHECK:
REVIEW:
APPROVE:

FLEXIBLE WALL PERMEABILITY
ASTM D 5084
METHOD D, CONSTANT RATE OF FLOW

PROJECT TITLE	CH2M/WPWMA PLANNING & PERMITTING-CA		Board #	9	COMMENTS: The sample was remolded to 89.8% of the Maximum Dry Density and OPTM + 1.9% (using ASTM D 1557).
PROJECT NUMBER	1649494		Flow Pump	2	
SAMPLE ID	PZ-2	40.0-45.0'	Flow Pump Speed	7	
SAMPLE TYPE	Bulk		Technician	FM	

Sample Data, Initial				Sample Data, Final	
Height, inches	3.809	B-Value, f	0.99	Height, inches	3.087
Diameter, inches	2.790	Cell Pres.	90.0	Diameter, inches	2.846
Area, cm²	39.44	Bot. Pres.	80.0	Area, cm²	41.04
Volume, cm³	301.46	Top Pres.	80.0	Volume, cm³	321.81
Mass, g	587.36	Tot. B.P.	80.0	Mass, g	637.57
Moisture Content, %	17.75	Head, max.	166.82	Moisture Content, %	27.82
Dry Density, pcf	103.25	Head, min.	166.82	Dry Density, pcf	96.72
Spec. Gravity (assumed)	2.750	Max. Grad.	21.53	Volume Solids, cm³	181.39
Volume Solids, cm³	181.39	Min. Grad.	21.53	Volume Voids, cm³	140.42
Volume Voids, cm³	120.07			Void Ratio	0.77
Void Ratio	0.66			Saturation, %	98.8%
Saturation, %	73.7%				

WATER CONTENTS		Sample Initial	Sample Final
Wt Soil & Tare, i	g	587.36	645.55
Wt Soil & Tare, f	g	498.82	506.69
Wt Tare	g	0.00	8.00
Wt Moisture Loss	g	88.54	138.86
Wt Dry Soil	g	498.82	498.69
Water Content	%	17.75%	27.85%

DESCRIPTION: sandy SILTY CLAY, fine to coarse; light brown.

Flow Pump Rate: 2.58E-04 cm³/sec

USCS: CL

TIME FUNCTIONS, SECONDS								dP				
DATE	DAY	HOUR	MIN	TEMP (°C)	dt (min)	dt,sec (min)	dt (sec)	dt,sec (sec)	Reading (psi)	Head (cm)	Gradient	Permeability (cm/sec)
10/13/17	4.3021	10	55	21.4	0	0	0	0	2.40	168.82	21.53	2.6E-07
10/13/17	4.3021	11	0	21.4	5	5	300	300	2.40	168.82	21.53	2.6E-07
10/13/17	4.3021	11	5	21.4	5	10	300	600	2.40	168.82	21.53	2.6E-07
10/13/17	4.3021	11	10	21.4	5	15	300	900	2.40	168.82	21.53	2.6E-07 *
10/13/17	4.3021	11	15	21.4	5	20	300	1200	2.40	168.82	21.53	2.6E-07 *
10/13/17	4.3021	11	20	21.4	5	25	300	1500	2.40	168.82	21.53	2.6E-07 *
10/13/17	4.3021	11	25	21.4	5	30	300	1800	2.40	168.82	21.53	2.6E-07 *

*TRANSCRIBED FROM ORIGINAL DATA SHEETS

PERMEABILITY REPORTED AS **: 2.6E-07 cm/sec **

DATE	10/13/17
CHECK	
REVIEW	
APPROVE	

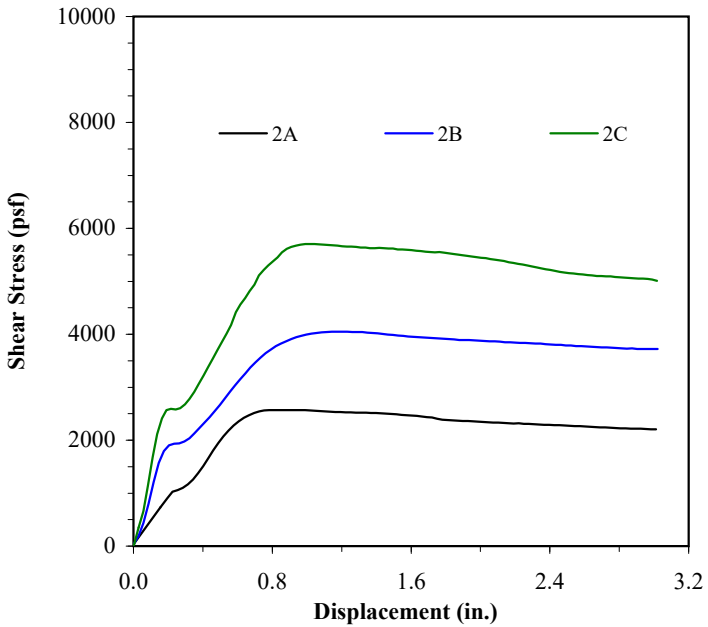
APPENDIX D

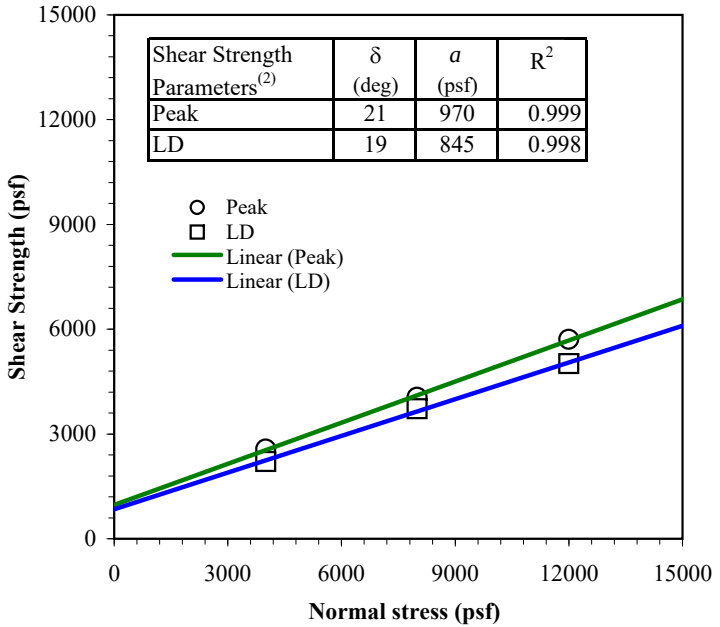
Laboratory Test Result - Clay/GCL Interface Shear

GOLDER ASSOCIATES
INTERFACE DIRECT SHEAR TESTING (ASTM D 6243)

Upper Shear Box: Clay soil (PZ-1) compacted to approximately 88% of max modified Proctor dry density at OMC + 3% (γ_{dmax} = 113.3 pcf, OMC = 17%) / Bentomat DN GCL with black NWGT side up

Lower Shear Box: Bedding sand compacted tight under dry conditions





Shear Strength Parameters[2]	δ (deg)	*a* (psf)	R^2
Peak	21	970	0.999
LD	19	845	0.998

Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	Soaking Stress (psf)	Soaking Time (hour)	Consolidation Stress (psf) 1	2	3	4	5	6	7	Consolidation Time (hour)	GCL ω_i (%)	GCL ω_f (%)	Shear Strength τ_P (psf)	Shear Strength τ_{LD} (psf)	Failure Mode
2A	12 x 12	4000	0.04	4000	48										69.6	2568	2207	(1)
2B	12 x 12	8000	0.04	8000	48										60.1	4051	3721	(1)
2C	12 x 12	12000	0.04	12000	48										58.8	5706	5009	(1)

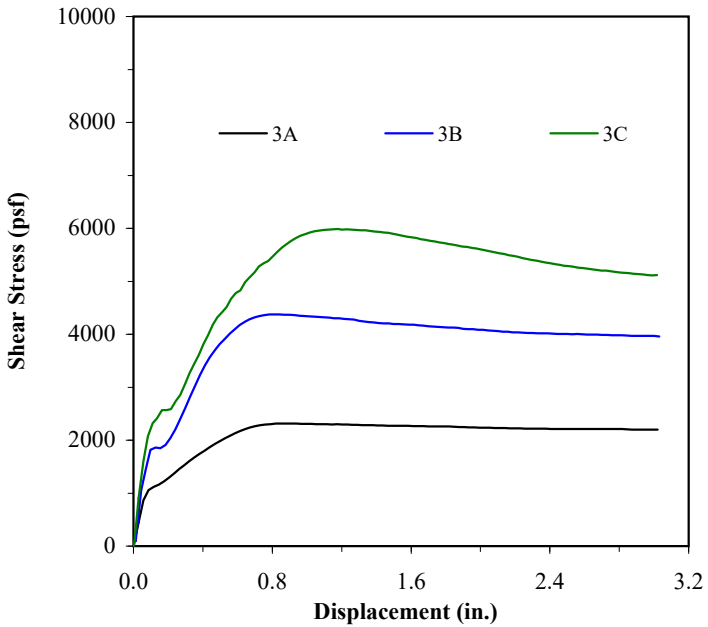
NOTES:
(1) Shear failure occurred at the interface between the clay (PZ-1) and black NWGT side of GCL.
(2) The reported friction angle (δ) and adhesion (a) were determined from a best-fit line drawn through the test data. Caution should be exercised in using δ and a for applications involving normal stresses outside the range of the stresses covered by the test series. The large-displacement shear strength (τ_{LD}) was calculated using the shear force measured at the end of the test.

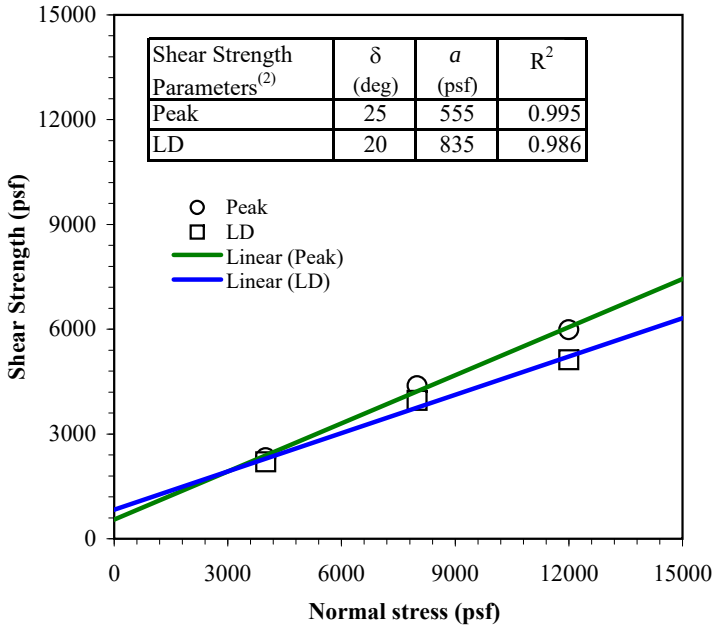
DATE OF REPORT:	10/16/2017
FIGURE NO.	B-2
PROJECT NO.	SGI17010
DOCUMENT NO.	
FILE NO.	

SGI TESTING SERVICES, LLC

GOLDER ASSOCIATES
INTERFACE DIRECT SHEAR TESTING (ASTM D 6243)

Upper Shear Box: Clay soil (BG-1) compacted to approximately 88% of max modified Proctor dry density at OMC + 3% (γ_{dmax} = 109.5 pcf, OMC = 16.2%) / Bentomat DN GCL with black NWGT side up
Lower Shear Box: Bedding sand compacted tight under dry conditions





Shear Strength Parameters[2]	δ (deg)	*a* (psf)	R^2
Peak	25	555	0.995
LD	20	835	0.986

Test No.	Shear Box Size (in. x in.)	Normal Stress (psf)	Shear Rate (in./min)	Soaking Stress (psf)	Soaking Time (hour)	Consolidation Stress (psf) 1	2	3	4	5	6	7	Consolidation Time (hour)	GCL ω_i (%)	GCL ω_f (%)	Shear Strength τ_P (psf)	Shear Strength τ_{LD} (psf)	Failure Mode
3A	12 x 12	4000	0.04	4000	48										68.3	2315	2197	(1)
3B	12 x 12	8000	0.04	8000	48										65.0	4377	3960	(1)
3C	12 x 12	12000	0.04	12000	48										60.5	5988	5120	(1)

NOTES:
(1) Shear failure occurred at the interface between the clay (BG-1) and black NWGT side of GCL.
(2) The reported friction angle (δ) and adhesion (a) were determined from a best-fit line drawn through the test data. Caution should be exercised in using δ and a for applications involving normal stresses outside the range of the stresses covered by the test series. The large-displacement shear strength (τ_{LD}) was calculated using the shear force measured at the end of the test.

SGI Testing Services, LLC

DATE OF REPORT:	10/18/2017
FIGURE NO.	B-3
PROJECT NO.	SGI17010
DOCUMENT NO.	
FILE NO.	

Appendix 2F
Adjacency Study

JACOBS ch2m

Memorandum

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Subject	**Adjacency Study for the Western Placer Waste Management Authority Master Planning Project, Placer County, California**
Attention	Western Placer Waste Management Authority
From	Joshua Mooneyham/CH2M, Katie Chapman/CH2M, and Lyndsey Lopez/CH2M
Date	February 6, 2019
Copies to	Project File

1. Introduction

This technical memorandum summarizes the findings of the Adjacency Study that was completed as part of the Western Placer Waste Management Authority (WPWMA) master planning project (project). The majority of this information was developed in July 2017.

The Adjacency Study included site visits and interviews performed by CH2M (now Jacobs Engineering Group Inc.) and its subcontractors Golder Associates and Integrated Waste Management Consultants, LLC, collectively referred to as the CH2M Team, on June 26 and 27, 2017. The objectives of the Adjacency Study were as follows:

- Review existing, related operational activities, to gain insight into how these operations may be impacted by the addition and modification of project elements associated with this master planning project.
- Assess the need for adjacency of related site elements.
- Identify locations that may be beneficial to reserve for future operations growth around specific project elements.

Additionally, the team noted areas of congestion and where site circulation and traffic interfaces appeared to pose safety concerns.

2. Project Description

WPWMA's existing facility is located at 3033 Fiddyment Road, Roseville, California 95747, and generally consists of the Western Regional Sanitary Landfill (landfill), a Materials Recovery Facility (MRF), a composting operation, a construction and demolition (C&D) processing area, a household hazardous waste (HHW) collection and storage area, a public tipping area, and a recyclable materials buyback facilities (buyback) area. These operations are conducted on the existing 320-acre active site. In addition to this site, the WPWMA owns the properties east (160 acres) and west (480 acres) of the site. Figure 1 shows the relative location and size of the existing active site and the two properties (eastern and western) adjacent to the active facility. Fiddyment Road runs between the active site and the western expansion parcel. Athens Road borders the northern portion of the active site. There are no public roads between the eastern property and the active site.

The WPWMA is in the process of developing a master plan to define facility modifications and enhancements to the WPWMA facility. The modifications and enhancements are necessary to provide long-term waste management solutions, develop opportunities for innovation and local industrial growth, maintain affordable rates, and comply with expanding regulations.

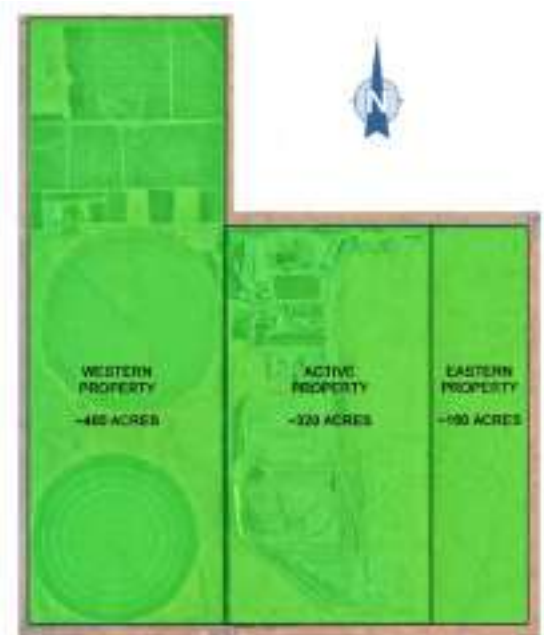


Figure 1. WPWMA Facility and Adjacent Properties

3. Adjacency Considerations

The CH2M Team conducted site visits on June 26 and 27, 2017. During those site visits, the CH2M Team met with WPWMA and Nortech (the site operator) staff, and toured portions of the site to gain additional insight into the existing operations at WPWMA's current facilities. While onsite, members of the CH2M Team observed the operations at the critical elements that had been identified for this project. Critical elements identified were the compost area, public/HHW/recyclable buyback area (public area), C&D area, and landfill. The CH2M Team observed each elements' operational adjacency considerations, functionality, access requirements, and future expansion needs. CH2M used the information gathered on the site visits during conceptual development of the Plan Concepts that were prepared as part of Phase I of this project. The following sections summarize the main adjacency considerations for each project critical element.

3.1 Critical Elements

3.1.1 Compost Area

The existing compost area is composed of two main areas: the north and south areas (Figures 2 and 3, respectively). The north area encompasses the north composting pond, north compost pad, and north compost windrows. The south area encompasses the south composting pond, south compost pad, south compost windrows, and the curing and screening area. The north and south compost areas are separated from one another by the C&D, green and wood waste tipping pad, and the processing area in the middle as shown on Figure 2. The compost area is further divided and constrained by site roadways, the maintenance area, equipment storage, and permitted landfill area (to the south of the southern compost windrows). The current divided configuration and layout results in operational inefficiency attributable to double handling of materials and extra time spent driving operation equipment back and forth between the areas. These existing features and current configuration significantly limit expansion options for the area.

Figure 2. WPWMA Compost Aerial

Without master planning efforts or changes to the compost processing technology (e.g., switching from space-intensive windrows to aerated static piles), the existing compost area will not be able to expand or grow in response to anticipated regional growth and additional organics that will require composting as a result of Senate Bill (SB) 1383.

Figure 3. Existing Composting Area

The layout and space of the site impact more than just the capacity and operational efficiency. The proximity of adjacent roadways, as well as the mixed traffic streams entering and exiting the area, pose potential safety concerns. For example, the north windrows are located so close to the road that when the windrow turner is operating, it can throw material at traffic on adjacent roads (Figure 4). Multiple types of traffic enter and exit the compost area and even cross at several locations (Figure 5). Types of traffic streams include self-haul green waste, hauler green waste, commercial account green waste, Nortech operations (moving green waste from the Z-wall at the Public Tipping Area), and members of the public picking up finished compost. There is currently no separation of public, commercial, or operational traffic in this area. In addition, the grinding area is too small for an operation of this size, contains blind turns for traffic due to compost pile heights, and results in multiple points of crossing traffic. The existing traffic flow creates safety concerns and is not conducive to optimal operations.

Figure 4. Proximity of Windrows to Incoming and Outgoing Traffic

Figure 5. Mixing Traffic Streams near C&D and Compost Areas

In addition to the processing of materials, the compost area also creates a marketable product. Currently customers must purchase compost at a separate area (the buyback building), then drive to the compost area to pick up the purchased compost.

The CH2M Team recommends that the following attributes be considered for the future compost area:

- Adequate space, capacity, and processing technology to address existing and future processing needs
- Seasonal peaking, product storage requirements versus market cycle
- Fully combined (nonseparated) operations with additional surrounding space to adapt to future growth
- Adequate space to address odor management needs
- Infrastructure for separate traffic streams with minimal cross points
- Design to minimize double handling of materials and compost products
- Convenient location for compost sales and loading, with protection against windblown contaminants
- Construction to include staged development to coincide with other site redevelopment and increase in organics diversion resulting from implementation of SB 1383

The ultimate configuration of the new compost area will depend on its location, the processing technology, and the other elements that are located around it. The primary adjacency consideration is placing this somewhere that has adequate space for capacity, separation of public from commercial traffic, and future adaptability. The following site operating components are also well suited for adjacent placement near the compost area:

- Dropoff areas for C&D, green waste, food waste, and wood-waste (as long as the commercial and public areas are separated sufficiently to promote safety).
- Compatible manufacturing (e.g., biomass) and other pilot technologies that use similar feedstocks or byproducts (e.g., overs).
- Loading and purchasing of final product: small-scale purchases could be located before the scale-house, and both incoming green waste and outgoing final commercial product sales need to be weighed before the scale-house. The traffic should be separate for public and commercial where cost effective.

3.1.2 Public Area

As shown on Figure 6, the existing public area is primarily composed of an L-shaped building that accepts HHW, e-waste, and recyclables buyback from the public, and a partially covered Z-wall where the public can drop off a variety of self-haul materials. Self-haul customers (self-haulers) enter the facility to drop off the following types of materials at the Z-wall tipping area: appliances, tires, self-haul C&D, and self-haul municipal solid waste (MSW). The following material streams exit the area:

- C&D is transported to the C&D processing area.
- Appliances and tires are transported to the MRF.
- MSW is transported to either the MRF or the landfill.

Figure 6. Public Tipping/HHW/Buyback

Customers enter this multipurpose area by going through the staffed public area gatehouse and then proceeding to the area(s) of interest. There is only one lane entering the site and one lane existing the site. The single-lane inlet and exit are used by self-haulers, employees of the HHW/buyback area, and facility operations traffic that moves the drop-boxes in and transports the collected materials out (as noted in the bulleted list above).

The HHW/buyback area is located on the northern corner of the cul-de-sac (see L-shaped building on Figures 6 and 7). Customers bring their recyclable buyback materials here to get weighed, and then receive a redemption ticket for compensation at the payout building. Customers also bring HHW and e-waste, which is unloaded, categorized, and stored here temporarily. This area also has an employee parking lot and a product and payout building (for compost purchase and buyback redemption).

Figure 7. HHW/Buyback Dropoff Area

The Z-wall has multiple elevated dropoff slots for customers to back into and unload their materials over a guardrail and into drop boxes that are located below the dropoff slots on a lower elevation (Figure 8). Drop boxes are brought into and out of the area by operations staff. Two staffed public area gatehouses are located south of the L-shaped building. These gatehouses are used to collect disposal tipping fees from self-haulers based on yardage estimates. However, based on the current space limitations, self-hauler customers with a dump-trailer or larger trailer are instead being redirected to the commercial scale and the MRF tipping floor for unloading because their vehicle, with the trailer, is too long to allow continued traffic flow during unloading.

Figure 8. Z-wall, Public Tipping Area

Only limited queuing space is available between the gatehouse and the Z-wall unloading area. Not enough unloading spots currently are available to handle peak flows. Sometimes lines stretch from the public gatehouse to Athens Avenue, as reported by facility staff.

Another pinch point that adds to the traffic congestion in this area is the confluence of the entrance/exit to the HHW and buyback area and the entrance/exit of the Z-wall area. Customers coming into the HHW/buyback area from the entrance must cross traffic exiting from the Z-wall area.

The current parking for employees does not allow for safe access to public, buyback, and HHW areas, and there is no safe way to remove and set aside reusable materials and items that need to be separated for other reasons.

The CH2M Team recommends that the following attributes be considered for the future public area:

- Adequate space (for both unloading and queueing) and capacity to address existing and future needs as well as additional surrounding space to adapt to future growth
- Switching from a Z-wall to a flat tipping pad that utilizes a design separating the operator from the public and provides greater flexibility for changes in waste stream and facility function
- Separate traffic streams with minimal cross points
- Design that minimizes double handling of materials
- Minimizing the frequency of internal transfers of materials received and bulked at this location by including space to store daily quantities of C&D, MSW, wood waste, appliances, tires, and recyclables, as applicable
- Adequate employee parking
- Underground power supplies
- Design flexibility so that different waste streams can be handled through the year based on seasonal needs
- Area for a reuse store to provide a safe way for the operator to salvage and market materials for reuse

The ultimate configuration of the public area will depend on its location, the chosen configuration, and the other elements that are located around it. There are advantages to putting the public area near the MRF since a large portion of the material that is received there goes to the MRF. It is also advantageous to place the public area near the other areas that are frequented by self-haulers (such as the compost area or C&D area).

3.1.3 C&D Area

The existing C&D area is located between the north and south compost pads and adjacent to the green and wood waste tipping pad (Figure 9). The C&D area consists of a covered tipping building and processing line.

Figure 9. C&D Area

Material enters this area from the following sources primarily:

- C&D from the public area/Z-wall
- Self-haul C&D (that was not directed to the Z-wall)

C&D from the public area/Z-wall is transported by operations staff. The remainder of incoming C&D is delivered by a mix of franchise and self-haulers. Some are account haulers, and some are not. Most self-haulers have a pickup truck and/or trailer. Self-haulers enter the site and then back up into either the open C&D area and green waste dropoff area or the C&D tipping building to unload their materials (Figure 10). The experience level of drivers of these vehicles varies as much as the range of customer and material types that are received in the area. Those with less experience driving these types of vehicles and backing them up in tight spaces cause safety and traffic flow concerns at times.

Figure 10. C&D and Green Waste Dropoff Area and C&D Tipping Building

The processing line consists of equipment that was repurposed from the MRF building and was not specifically designed for C&D processing (Figure 11). The processing line is not sufficient both in throughput and condition to process either current or future levels of C&D quantities. The existing space for C&D processing, materials staging and storage, and materials dropoff are insufficient and therefore potentially unsafe. Stockpiles block the line of sight for customers and workers, and the queuing for the time to untarp and unload trucks can be lengthy. In addition, this area has unsafe traffic conditions as described earlier in this memorandum for the C&D and Compost areas. The public needs a separate location to unload while commercial customers use the tipping area.

Figure 11. C&D Processing Line and Tipping Building

Historically, waste streams change throughout the year and over time. At the time of the site visits, 40 percent of C&D was going to landfill, and 60 percent was going into the MRF. The C&D area is receiving more stump, treated wood waste, and preengineered materials that must be sorted and ultimately disposed of in the landfill.

The CH2M Team recommends that the following attributes be considered for the future C&D area:

- Adequate space (for queuing, unloading, processing, and stockpiles)
- Updated processing line technology under a cover with sufficient capacity and functionality to address existing and future processing quantities as well as the types of materials received currently and anticipated in the future; a processing line that can be expanded and adjusted for waste stream needs is preferred
- A processing line with surrounding space to adapt to future needs
- Separate traffic streams with minimal cross points

The ultimate configuration of the C&D area will depend on its location, the chosen configuration, and the other elements that are located around it. It would be advantageous to locate the C&D area near the areas where products from this area are going (e.g., landfill or future pilot technology, or potential third-party compatible manufacturing process).

3.1.4 Landfill

The landfill footprint takes up most of the existing site, as shown on Figure 12. The permitted landfill capacity is currently 292 acres. Of this number, 62 acres have unlined modules (i.e., Modules 1, 2, 10, and 11). The landfill is open Monday through Friday, but the operator occasionally has to operate on the weekend. The following incoming waste streams are weighed (inbound and outbound) at either the commercial scale and scale-house or at the scale south of the public area (sludge and larger commercial accounts going to landfill), and sent directly to the landfill:

- Direct-haul C&D treated wood
- Direct-haul C&D
- Direct-haul commercial food waste and wet MSW loads
- Direct-haul sludge and mixed inerts

Additionally, the landfill receives waste from internal transports originating at other areas in the facility, as follows:

- MSW from the public area/Z-wall
- Residue from the C&D area
- Residue from the compost area
- Residue from the MRF building

In addition to the active and closed portions of the landfill, important ancillary systems are part of the overall landfill area. The stormwater, landfill gas, and leachate collections systems spread throughout the area. Equipment that is used within the landfill is maintained at the onsite maintenance building near the MRF building.

Figure 12. Landfill Modules

The CH2M Team recommends that the following attributes be considered for the future landfill area:

- Options for mitigating the long-term risk associated with the unlined modules
- Optimal placement and layout of new landfill modules to maximize air space and operational efficiency
- Separate dedicated access route

The ultimate configuration of the future landfill will depend on its location and placement in relation to the existing landfill modules. The landfill will need to be placed near an inbound/outbound scale(s) and maintenance facility.

3.2 Other Elements

During the Adjacency Study site visits, the CH2M Team spent most of its time at the critical elements discussed in previous sections. However, additional observations were made at four other locations

throughout the site—the maintenance area, entrance and scales, administration building and parking area, and recyclable materials storage area. The following sections present observations and recommendations for those locations.

3.2.1 Maintenance Area

The maintenance area is located south of the MRF building, and it consists of a building where maintenance is performed and an outdoor storage and staging area where equipment sits while waiting on parts delivery and installation (Figure 13). The maintenance area currently serves the MRF and compost and landfill equipment. The current configuration and placement does not support expansion of this building, which will be needed to accommodate future site needs.

Figure 13. Maintenance Building with Storage

The CH2M Team recommends that the following attributes be considered for the future maintenance area:

- Maintenance facilities located near fuel areas and employee parking lots, and conveniently located near the operations that they support
- Access to the maintenance building for internal users only, and separated from external site user traffic access
- Additional space for spare parts, inoperable vehicles waiting on parts, various delivery, and repair, as well as for busy times both during and after hours of operation (e.g., traffic separation and lighting)

3.2.2 Entrance/Scales

All traffic (i.e., haulers, account/other commercial, and self-haulers) enters and exits the site at one location. A commercial scale and scale-house are used for inbound and outbound loads. This scale is generally used for haulers and other commercial accounts (everything commercial is weighed) and larger public/self-haul loads that need to be weighed. There is also a public area gatehouse where self-haulers who are directed to the public area pay disposal fees based on yardage estimates. The other main scale, which is south of the public area, is used for sludge and other larger commercial accounts going to landfill; the main scale is not used for self-haul or public-related materials. A smaller scale in the buyback area is used to weigh buyback materials for customer reimbursement. An axel scale south of the MRF is only used to make sure that road weights are appropriate, and is not used to weigh commodities.

The current one entrance/commercial-scale configuration reduces customer confusion about where to enter the site and reduces the number of employees that are needed to run the entrance/ scale area (Figure 14). However, the current location and configuration of the scale are not flexible or adaptable enough for peak traffic needs, and do not currently separate commercial and self-haul traffic.

Figure 14. Commercial Scale

The CH2M Team recommends that the following attributes be considered for the future entrance/ scale area(s):

- Adequate placement and configuration to optimize the overall facility layout
- Adequate space to accommodate peak flow and queuing needs and to adjust to other needs
- Areas for separate commercial and self-haul traffic
- Technology upgrades such as radio-frequency identification (RFID) for known customer accounts and vehicles, card key/debit card type payment systems, and fast track-type systems
- Resources for minimal redundancy, if separate entrances are needed for the existing site and western property based on ultimate planned use (for example, if there will be no public uses in one of the areas, perhaps have an account or debit type system only on that site)

3.2.3 Administration Building/Parking

The current administration building is attached to the MRF building with a parking lot adjacent to the building. The building and parking lot will need to be expanded to support future growth, and may not be sufficient for current staff and parking needs in some situations.

The CH2M Team recommends that the following attribute be considered for the administration area:

- Adequate building and parking space for growth

3.2.4 Recyclable Materials Storage Area

Recovered and baled recyclable materials currently are stored in multiple places around the site. There is inadequate storage, and no covered location for materials.

The CH2M Team recommends that the following attributes be considered for the future recyclable materials storage area:

- Adequate space to accommodate existing and future capacity, ideally in one location near a WPWMA operated scale for quick sales or general area of the facility
- Adequate space to accommodate fluctuations in the market (resulting in more storage for longer periods)
- Covered storage area

4. Summary

The CH2M Team made a number of observations during the June 26 and 27, 2017, Adjacency Study site visits that will be valuable when considering future site layouts and configurations. Overall, the CH2M Team recommends that future site modifications include changes that will provide adequate capacity,

flexibility, separate traffic streams, and improved traffic flow. Specific recommendations are discussed by project element in this memorandum and are summarized in Table 1.

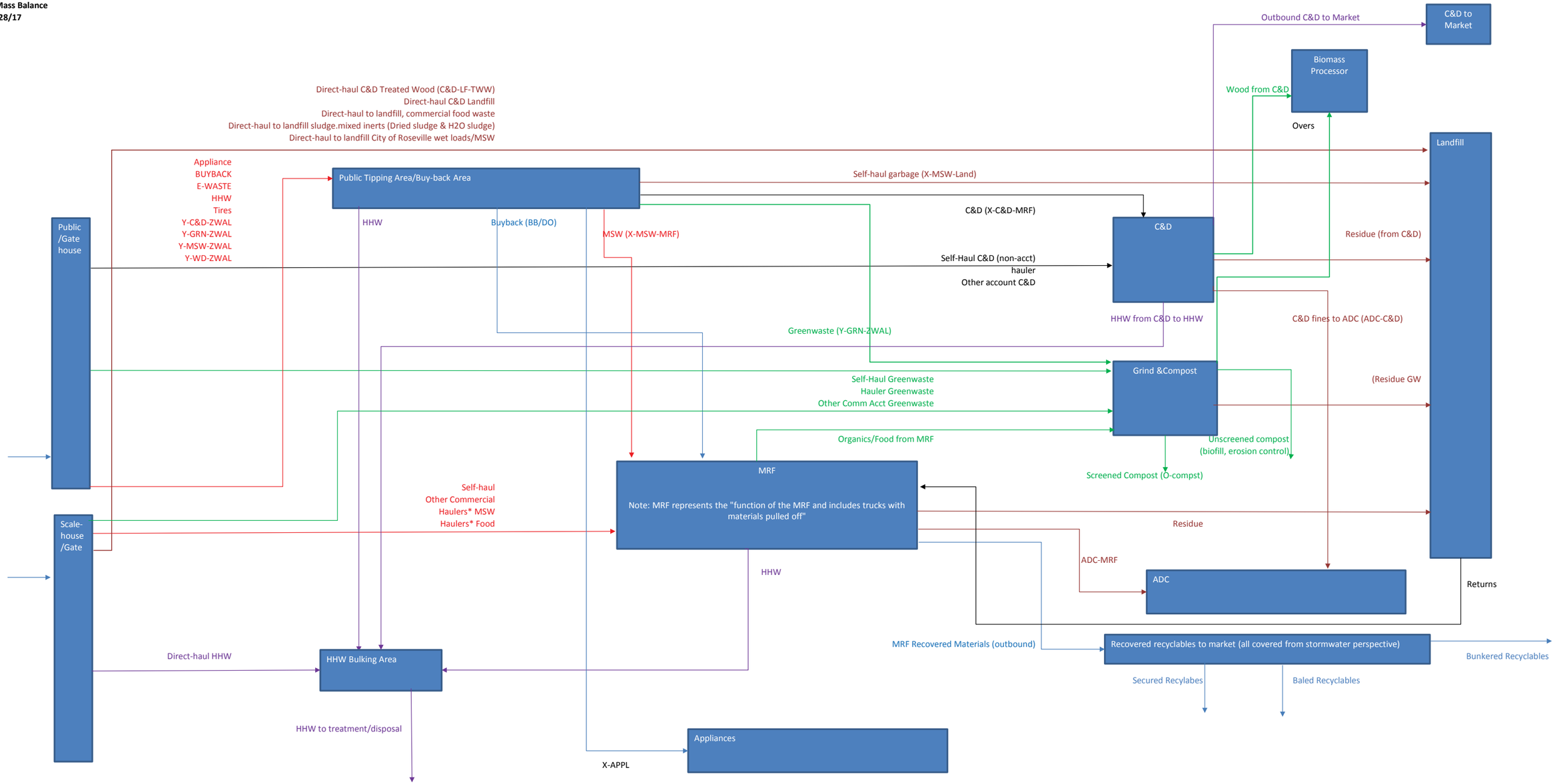
Table 1. Adjacency Recommendations

Adjacency Study for the Western Placer Waste Management Authority Master Planning Project, Placer County, California

Project Element	Primary Adjacency Considerations	Other Adjacency Considerations
Critical Elements		
Compost Area	• Locate proximate to loading and purchase area for final product, which aligns with public tipping area • Develop infrastructure for separate traffic flow	• If across Fiddyment Road from landfill and C&D areas, include sufficient storage for materials bulking and transport at acceptable frequency
Public Area	• Locate proximate to compost area for loading and purchase of finished compost • Locate proximate to entrance • Develop infrastructure for separate traffic flow	• If across Fiddyment Road from landfill and MRF areas, include sufficient storage for materials bulking and transport at acceptable frequency
C&D Area	• Locate proximate to landfill for residuals disposal	• Could benefit from being proximate to the compatible manufacturing and pilot technology area, if applicable
Landfill	• Separate traffic flow from public users and other elements • Consolidate landfill operations on one side of Fiddyment Road for ease of haul and operations and avoid need for duplicate landfill infrastructure (for example, landfill gas flare, monitoring network)	• If landfill operations are on both sides of Fiddyment Road at the same time, duplicate operations and components may be required
Other Elements		
Maintenance Area	• Locate proximate to all critical elements, may need one on each side of Fiddyment Road • Separate from public and operations traffic to the degree possible • Must be accessible from landfill as well and by landfill compactor	
Entrance/Scales	• Separate traffic streams for function, safety, and to ease site congestion • Separate entrance on West Property, will vary depending on the elements on that property • Include adequate queuing for public users	• Incorporate prepayment and electronic payment methods • Incorporate RFID and other methods to scan and auto-bill for loads • Separate public and account traffic and possibly entrances
Administration Building/Parking	• Locate adjacent to existing building and parking	
Recyclable Materials Storage Area	• Locate near MRF and scales	

Appendix 2G
Mass Flow Diagram

WPWMA Mass Balance
Revised 9/28/17



*Haulers: Roseville, Recolgy, and Lincoln

Appendix 2H
2016/2017 Tonnage and Vehicle Count Data

File from Eric Oddo emailed 8/23/17

All Days

Source	Material	Total Transactions	Unique Transactions	Vehicle Count
Hauler	Appliance	1.29	0.05	1.29
Hauler	C&D	18.80	18.80	9.40
Hauler	E Waste	1.00	0.25	1.00
Hauler	Foodwaste	6.15	6.15	3.07
Hauler	Green	40.25	40.25	20.13
Hauler	HHW	1.90	1.88	1.15
Hauler	Inbound	19.55	19.55	9.78
Hauler	Inert	4.32	4.32	2.16
Hauler	MSW	160.41	160.41	80.21
Hauler	S&MI	12.47	12.47	6.23
Hauler	Tires	1.04	0.00	1.04
Hauler	Wood	3.29	3.29	1.64
Nortech	ADC	16.86	16.86	8.43
Nortech	C&D	14.12	14.12	7.06
Nortech	Inbound	6.00	6.00	3.00
Nortech	Internal	25.28	25.28	12.64
Nortech	MSW	25.19	25.19	12.60
Nortech	Outbound	35.99	35.99	17.99
Nortech	Residue	95.72	95.72	47.86
Nortech	Return	2.00	2.00	1.00
Nortech	Wood	9.33	9.33	4.67
Other Commercial Account	Appliance	2.37	0.84	2.37
Other Commercial Account	Buyback	3.14	0.03	3.14
Other Commercial Account	C&D	42.91	42.88	22.59
Other Commercial Account	E Waste	2.60	0.02	2.60
Other Commercial Account	Green	20.31	20.20	12.08
Other Commercial Account	HHW	3.68	0.43	3.68
Other Commercial Account	Inbound	3.07	3.07	1.54
Other Commercial Account	Inert	10.18	10.13	5.51
Other Commercial Account	MSW	14.04	13.98	9.48
Other Commercial Account	Outbound	22.29	22.29	11.14
Other Commercial Account	S&MI	8.55	8.55	4.27
Other Commercial Account	Tires	1.53	0.27	1.47
Other Commercial Account	Wood	2.51	2.44	1.47
Self Haul	Appliance	24.79	8.04	24.79
Self Haul	Buyback	102.67	76.22	102.67
Self Haul	C&D	173.60	172.87	125.31
Self Haul	E Waste	34.89	10.86	34.89
Self Haul	Green	67.59	65.75	61.62
Self Haul	HHW	61.72	44.14	61.69
Self Haul	Inbound	6.59	6.59	3.29
Self Haul	Inert	36.48	35.36	31.14
Self Haul	MSW	211.16	209.91	192.88
Self Haul	Outbound	2.00	2.00	1.00
Self Haul	S&MI	2.00	2.00	1.00
Self Haul	Tires	4.73	0.75	4.61
Self Haul	Wood	10.41	9.98	9.16

Weekdays

Source	Material	Total Transactions	Unique Transactions	Vehicle Count
Hauler	Appliance	1.31	0.05	1.31
Hauler	C&D	22.48	22.48	11.24
Hauler	E Waste	1.00	0.25	1.00
Hauler	Foodwaste	6.65	6.65	3.33
Hauler	Green	43.56	43.56	21.78
Hauler	HHW	1.89	1.87	1.15
Hauler	Inbound	23.03	23.03	11.52
Hauler	Inert	4.41	4.41	2.21
Hauler	MSW	213.60	213.60	106.80
Hauler	S&MI	12.47	12.47	6.23
Hauler	Tires	1.04	0.00	1.04
Hauler	Wood	3.11	3.11	1.55
Nortech	ADC	17.20	17.20	8.60
Nortech	C&D	12.51	12.51	6.25
Nortech	Inbound	6.00	6.00	3.00
Nortech	Internal	23.08	23.08	11.54
Nortech	MSW	19.44	19.44	9.72
Nortech	Outbound	39.50	39.50	19.75
Nortech	Residue	100.06	100.06	50.03
Nortech	Return	2.00	2.00	1.00
Nortech	Wood	9.33	9.33	4.67
Other Commercial Account	Appliance	2.32	0.83	2.32
Other Commercial Account	Buyback	2.96	0.04	2.96
Other Commercial Account	C&D	54.35	54.31	28.39
Other Commercial Account	E Waste	2.50	0.03	2.50
Other Commercial Account	Green	23.92	23.81	13.75
Other Commercial Account	HHW	3.95	0.47	3.95
Other Commercial Account	Inbound	3.07	3.07	1.53
Other Commercial Account	Inert	11.16	11.12	5.99
Other Commercial Account	MSW	15.91	15.84	10.48
Other Commercial Account	Outbound	22.61	22.61	11.30
Other Commercial Account	S&MI	8.57	8.57	4.28
Other Commercial Account	Tires	1.56	0.24	1.51
Other Commercial Account	Wood	2.62	2.58	1.47
Self Haul	Appliance	20.58	7.16	20.58
Self Haul	Buyback	86.24	67.28	86.24
Self Haul	C&D	177.42	176.59	124.16
Self Haul	E Waste	29.13	10.01	29.13
Self Haul	Green	56.17	54.61	49.61
Self Haul	HHW	56.50	32.91	56.46
Self Haul	Inbound	7.09	7.09	3.54
Self Haul	Inert	36.87	35.85	30.13
Self Haul	MSW	166.90	165.53	150.64
Self Haul	Outbound	2.00	2.00	1.00
Self Haul	S&MI	2.00	2.00	1.00
Self Haul	Tires	3.95	0.68	3.83
Self Haul	Wood	9.33	8.98	7.84

Weekends

Source	Material	Total Transactions	Unique Transactions	Vehicle Count
Hauler	Appliance	1.18	0.00	1.18
Hauler	C&D	3.65	3.65	1.83
Hauler	E Waste	0	0	0
Hauler	Foodwaste	4.88	4.88	2.44
Hauler	Green	2.70	2.70	1.35
Hauler	HHW	2.00	2.00	1.00
Hauler	Inbound	10.29	10.29	5.14
Hauler	Inert	2.44	2.44	1.22
Hauler	MSW	25.63	25.63	12.82
Hauler	S&MI			
Hauler	Tires	1.00	0.00	1.00
Hauler	Wood	8.00	8.00	4.00
Nortech	ADC	7.11	7.11	3.56
Nortech	C&D	18.20	18.20	9.10
Nortech	Inbound			
Nortech	Internal	30.86	30.86	15.43
Nortech	MSW	39.86	39.86	19.93
Nortech	Outbound	5.24	5.24	2.62
Nortech	Residue	36.32	36.32	18.16
Nortech	Return	0	0	0
Nortech	Wood	0	0	0
Other Commercial Account	Appliance	2.64	0.84	2.64
Other Commercial Account	Buyback	3.58	0.00	3.58
Other Commercial Account	C&D	10.59	10.58	6.22
Other Commercial Account	E Waste	3.00	0.00	3.00
Other Commercial Account	Green	7.58	7.45	6.16
Other Commercial Account	HHW	1.43	0.14	1.43
Other Commercial Account	Inbound	3.09	3.09	1.55
Other Commercial Account	Inert	3.85	3.74	2.38
Other Commercial Account	MSW	7.92	7.92	6.22
Other Commercial Account	Outbound	20.20	20.20	10.10
Other Commercial Account	S&MI	6.00	6.00	3.00
Other Commercial Account	Tires	1.40	0.40	1.33
Other Commercial Account	Wood	1.82	1.59	1.47
Self Haul	Appliance	35.46	10.27	35.46
Self Haul	Buyback	144.15	98.78	144.15
Self Haul	C&D	163.92	163.43	128.23
Self Haul	E Waste	49.42	13.01	49.42
Self Haul	Green	96.53	93.98	92.05
Self Haul	HHW	74.97	72.68	74.97
Self Haul	Inbound	2.00	2.00	1.00
Self Haul	Inert	35.50	34.10	33.73
Self Haul	MSW	323.34	322.37	299.93
Self Haul	Outbound	0	0	0
Self Haul	S&MI	0	0	0
Self Haul	Tires	6.58	0.93	6.47
Self Haul	Wood	13.13	12.50	12.48

Peak Day **Friday June 30, 2017**

Source	Material	Total Transactions	Unique Transactions	Vehicle Count
Hauler	Appliance	1.00	0.00	1.00
Hauler	C&D	38.00	38.00	19.00
Hauler	E Waste	0	0	0
Hauler	Foodwaste	8.00	8.00	4.00
Hauler	Green	40.00	40.00	20.00
Hauler	HHW	0	0	0
Hauler	Inbound	16.00	16.00	8.00
Hauler	Inert	6.00	6.00	3.00
Hauler	MSW	242.00	242.00	121.00
Hauler	S&MI	12.00	12.00	6.00
Hauler	Tires	0	0	0
Hauler	Wood	2.00	2.00	1.00
Nortech	ADC	12.00	12.00	6.00
Nortech	C&D	26.00	26.00	13.00
Nortech	Inbound	0	0	0
Nortech	Internal	30.00	30.00	15.00
Nortech	MSW	34.00	34.00	17.00
Nortech	Outbound	40.00	40.00	20.00
Nortech	Residue	106.00	106.00	53.00
Nortech	Return	0	0	0
Nortech	Wood	0	0	0
Other Commercial Account	Appliance	13.00	6.00	13.00
Other Commercial Account	Buyback	13.00	0.00	13.00
Other Commercial Account	C&D	96.00	96.00	68.00
Other Commercial Account	E Waste	12.00	0.00	12.00
Other Commercial Account	Green	43.00	43.00	33.00
Other Commercial Account	HHW	29.00	0.00	29.00
Other Commercial Account	Inbound	0	0	0
Other Commercial Account	Inert	28.00	28.00	15.00
Other Commercial Account	MSW	119.00	119.00	115.00
Other Commercial Account	Outbound	4.00	4.00	2.00
Other Commercial Account	S&MI	10.00	10.00	5.00
Other Commercial Account	Tires	4.00	1.00	4.00
Other Commercial Account	Wood	1.00	1.00	1.00
Self Haul	Appliance	28.00	10.00	28.00
Self Haul	Buyback	106.00	83.00	106.00
Self Haul	C&D	262.00	262.00	179.00
Self Haul	E Waste	44.00	19.00	44.00
Self Haul	Green	69.00	68.00	62.00
Self Haul	HHW	90.00	57.00	90.00
Self Haul	Inbound	0	0	0
Self Haul	Inert	43.00	42.00	35.00
Self Haul	MSW	257.00	256.00	224.00
Self Haul	Outbound	0	0	0
Self Haul	S&MI	0	0	0
Self Haul	Tires	10.00	4.00	10.00
Self Haul	Wood	10.00	10.00	8.00

Total transactions: This number represents the total number of transactions conducted by the scalehouse attendants. It includes two (2) transactions for every weighed customer (gross and tare weights), one (1) transaction for non-weighed products and extra counts for multiple items on a single ticket.

Unique transactions: Probably a better representation of traffic loading at the scalehouse. Includes two (2) transactions for every weighed customer but excludes extra counts for multiple material items on a single ticket.

Vehicle count: Actual vehicle count hitting the scalehouse. All customers are counted as one (1) count regardless of whether or not they are weighed.

Self haul: While not exactly representative of the customer loading that goes to the public area (as some of these customers are weighed), it is a good approximation for the customer loading that would be anticipated at a new public area.

All Days

Material	Tonnage	Unit type	Vehicle Count
Appliance	32.4	C	26.05
BB/DO Recyclables	2.2	W	2.73
BUYBACK	103.2	C	103.23
E-WASTE	46.0	C	35.49
HHW	62.5	C	62.43
Tires	14.7	C	4.83
X-APPL.	3.2	W	1.18
X-C&D-MRF	26.2	W	7.06
X-MSW-LAND	1.6	W	1.44
X-MSW-MRF	30.0	W	11.68
Y-C&D-ZWAL	109.9	V	79.67
Y-GRN-ZWAL	87.4	V	59.13
Y-MSW-ZWAL	247.3	V	179.65
Y-WD-ZWAL	12.5	V	8.14

total out	63.31	Total ZWAL	326.58
		Total buyback/HHW	232.04
		Total vehicle in	558.63

Weekdays

Material	Tonnage	Unit type	Vehicle Count
Appliance	28.1	C	22.03
BB/DO Recyclables	2.2	W	2.34
BUYBACK	86.8	C	86.77
E-WASTE	41.8	C	29.78
HHW	57.5	C	57.46
Tires	12.9	C	4.12
X-APPL.	2.9	W	1.06
X-C&D-MRF	24.8	W	6.25
X-MSW-LAND	1.6	W	1.38
X-MSW-MRF	23.7	W	8.57
Y-C&D-ZWAL	102.9	V	73.60
Y-GRN-ZWAL	71.3	V	46.57
Y-MSW-ZWAL	192.4	V	139.91
Y-WD-ZWAL	10.3	V	6.55

total out	55.04	Total ZWAL	266.64
		Total buyback/HHW	200.16
		Total vehicle in	466.80

Weekends

Material	Tonnage	Unit type	Vehicle Count
Appliance	43.2	C	36.22
BB/DO Recyclables	2.4	W	3.57
BUYBACK	144.8	C	144.81
E-WASTE	56.5	C	49.88
HHW	75.1	C	75.07
Tires	18.8	C	6.54
X-APPL.	4.1	W	1.48
X-C&D-MRF	29.9	W	9.10
X-MSW-LAND	2.1	W	2.00
X-MSW-MRF	46.1	W	19.62
Y-C&D-ZWAL	127.6	V	95.12
Y-GRN-ZWAL	128.2	V	90.93
Y-MSW-ZWAL	386.0	V	279.98
Y-WD-ZWAL	18.0	V	12.13

total out	84.62	Total ZWAL	478.16
		Total buyback/HHW	312.52
		Total vehicle in	790.68

Peak Day **Saturday May 27, 2017**

Material	Tonnage	Unit type	Vehicle Count
Appliance	66.0	C	53.00
BB/DO Recyclables	1.2	W	4.00
BUYBACK	236.0	C	236.00
E-WASTE	58.0	C	53.00
HHW	113.0	C	113.00
Tires	89.0	C	16.00
X-APPL.	0.0	W	0.00
X-C&D-MRF	49.6	W	13.00
X-MSW-LAND	65.4	W	28.00
X-MSW-MRF	0.0	W	0.00
Y-C&D-ZWAL	210.3	V	156.00
Y-GRN-ZWAL	218.5	V	156.00
Y-MSW-ZWAL	587.8	V	408.00
Y-WD-ZWAL	43.3	V	35.00

total out	116.15	Total ZWAL	755.00
		Total buyback/HHW	471.00
		Total vehicle in	1,226.00

Note: Based on BV Report and Aerial, assuming zwal has 15 stalls

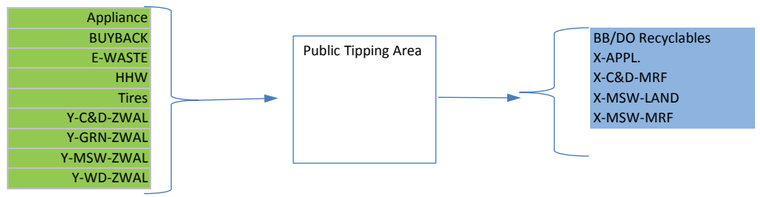
Note: peak day based on peak traffic loading, not accepted tonnage

Conversion Factors: Green - 328 lb/cy; Wood 528 lbs/cy.

Code descriptions

c	number of individual units
v	cubic yards
w	tons
Appliance	refridgerated and non-refridgerated appliances
BUYBACK	residential recyclable buyback and drop off
E-WASTE	electronic wastes and CRTs
HHW	residentially and commercially generated HHW
BB/DO Recyclables	Recyclable materials collected and buyback and sent to MRF for baling
Tires	Car and truck tires
X-APPL.	Appliances (both refrigerated and non-refrigerated)
X-C&D-MRF	C&D sent to MRF for processing
X-MSW-LAND	MSW sent to landfill
X-MSW-MRF	MSW sent to MRF for processing
Y-C&D-ZWAL	C&D
Y-GRN-ZWAL	Greenwaste
Y-MSW-ZWAL	MSW
Y-WD-ZWAL	Woodwaste

Flow Diagram



All Days

Source	Material	Tonnage	Vehicle Count
	Inbound	16.44	11.03
	Outbound	102.05	9.59
	Residue	651.01	40.23
	ADC-MRF	95.47	1.33
	X-MSW-MRF	29.98	11.68
Hauler	FOOD-MRF	11.01	1.33
Hauler	MSW-MRF	607.08	77.34
Other Commercial Account	MSW-MRF	6.64	3.78
Self Haul	MSW-MRF	11.66	17.89

Weekdays

Source	Material	Tonnage	Vehicle Count
	Inbound	20.66	13.10
	Outbound	137.21	12.34
	Residue	677.59	41.94
	ADC-MRF	97.19	6.57
	X-MSW-MRF	23.66	8.57
Hauler	FOOD-MRF	11.51	1.30
Hauler	MSW-MRF	809.52	102.96
Other Commercial Account	MSW-MRF	7.77	4.27
Self Haul	MSW-MRF	10.66	15.74

Weekends

Source	Material	Tonnage	Vehicle Count
	Inbound	5.41	5.64
	Outbound	12.23	2.55
	Residue	287.22	16.84
	ADC-MRF	47.07	3.33
	X-MSW-MRF	46.09	19.62
Hauler	FOOD-MRF	10.15	1.38
Hauler	MSW-MRF	94.09	12.43
Other Commercial Account	MSW-MRF	2.30	1.91
Self Haul	MSW-MRF	14.17	23.33

Peak Day **Tuesday January 10, 2017**

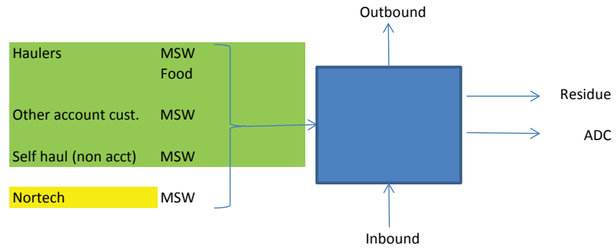
Source	Material	Tonnage	Vehicle Count
	Inbound	30.05	9.00
	Outbound	66.73	7.00
	Residue	648.29	29.00
	ADC-MRF	64.99	5.00
	X-MSW-MRF	6.02	3.00
Hauler	FOOD-MRF	0.00	0.00
Hauler	MSW-MRF	1,036.38	113.00
Other Commercial Account	MSW-MRF	14.40	4.00
Self Haul	MSW-MRF	3.26	5.00

Note: peak day based on peak MSW acceptance

Code descriptions

Inbound	Inbound source seperated recyclables
Outbound	Recovered commodities directed to outside markets or other portions of the facility (e.g. cardboard, metals, inerts and wood waste)
Residue	Unrecovered product sent for landfilling
ADC-MRF	MRF fines used as ADC at the WRSL
X-MSW-MRF	MSW received from the public and transported to the MRF
FOOD-MRF	Wet/sloppy MSW with a decent amount of recyclables
MSW-MRF	MSW directed to the MRF
Haulers	Recology, City of Roseville, City of Lincoln

Flow Diagram



All Days

Source	Material	Tonnage	Vehicle Count
Hauler	C&D MRF	30.93	5.40
Other Commercial Account	C&D MRF	29.37	13.10
Self Haul	C&D MRF	48.37	40.93
Nortech	ADC-C&D	37.23	2.40
Nortech	Outbound	11.03	1.96
Nortech	Residue	88.08	7.72
Nortech	X-C&D-MRF	26.24	7.06

Into C&D line	134.90	66.49
Outboud	11.03	1.96
Residue	88.08	7.72
ADC	37.23	2.40

Weekdays

Source	Material	Tonnage	Vehicle Count
Hauler	C&D MRF	34.77	6.24
Other Commercial Account	C&D MRF	36.19	16.28
Self Haul	C&D MRF	53.40	43.95
Nortech	ADC-C&D	37.27	2.40
Nortech	Outbound	11.21	2.00
Nortech	Residue	91.07	7.95
Nortech	X-C&D-MRF	24.80	6.25

Into C&D line	149.16	72.72
Outboud	**11.21**	**2.00**
Residue	91.07	7.95
ADC	**37.27**	**2.40**

Weekends

Source	Material	Tonnage	Vehicle Count
Hauler	C&D MRF	13.95	1.71
Other Commercial Account	C&D MRF	9.44	3.82
Self Haul	C&D MRF	35.62	33.27
Nortech	ADC-C&D	26.90	2.00
Nortech	Outbound	8.32	1.21
Nortech	Residue	17.91	2.27
Nortech	X-C&D-MRF	29.89	9.10

Into C&D line	88.91	47.90
Outboud	8.32	1.21
Residue	17.91	2.27
ADC	26.90	2.00

Peak Day **Wednesday October 12, 2016**

Source	Material	Tonnage	Vehicle Count
Hauler	C&D MRF	53.91	9.00
Other Commercial Account	C&D MRF	58.32	25.00
Self Haul	C&D MRF	98.81	59.00
Nortech	ADC-C&D	33.41	2.00
Nortech	Outbound	5.26	1.00
Nortech	Residue	93.83	8.00
Nortech	X-C&D-MRF	19.26	4.00

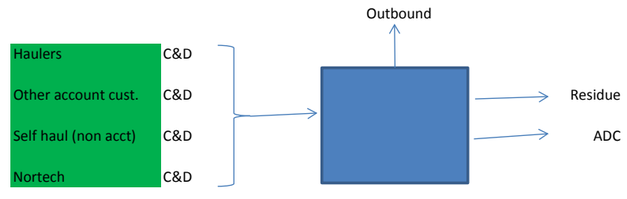
Into C&D line	**230.30**	**97.00**
Outbound	5.26	1.00
Residue	**93.83**	**8.00**
ADC	33.41	2.00

Note: peak day based on peak C&D acceptance

Code descriptions

Outbound	Recovered commodities directed to outside markets or other portions of the facility (e.g. metals, plastics, inerts and wood waste)
Residue	Unrecovered product sent for landfilling
ADC-C&D	C&D fines used as ADC at the WRSL
X-C&D-MRF	C&D received from the public and transported to the MRF
C&D MRF	C&D directed to the MRF
Haulers	Recology, City of Roseville, City of Lincoln

Flow Diagram



All Days

Source	Material	Tonnage	Vehicle Count
Hauler	C&D LANDFL	32.34	5.33
Hauler	C&D-LF-TWW	5.18	1.13
Hauler	DRIED SLDG	5.66	1.00
Hauler	FOOD WASTE	24.16	2.61
Hauler	H20 SLUDGE	19.21	1.97
Hauler	MSW-LAND	22.02	3.76
Hauler	SLUDGE	59.80	5.72
Nortech	ADC-C&D	37.23	2.40
Nortech	ADC-MRF	95.47	6.45
Nortech	Residue	760.77	49.41
Nortech	Returns	1.83	1.00
Nortech	ROAD TRASH	0.18	1.10
Nortech	X-MSW-LAND	1.59	1.41
Other Commercial Account	C&D LANDFL	37.18	9.49
Other Commercial Account	C&D-LF-TWW	9.83	1.19
Other Commercial Account	MSW-LAND	6.06	2.23
Other Commercial Account	SLUDGE	30.26	2.39
Self Haul	C&D LANDFL	22.32	9.26
Self Haul	C&D-LF-TWW	4.51	1.40
Self Haul	MSW-LAND	3.47	1.85

Direct haul, sludge, and road trash to landfill (total) 282.16

Weekdays

Source	Material	Tonnage	Vehicle Count
Hauler	C&D LANDFL	32.33	5.34
Hauler	C&D-LF-TWW	5.18	1.13
Hauler	DRIED SLDG	5.66	1.00
Hauler	FOOD WASTE	24.37	2.63
Hauler	H20 SLUDGE	19.21	1.97
Hauler	MSW-LAND	22.35	3.82
Hauler	SLUDGE	59.80	5.72
Nortech	ADC-C&D	37.27	2.40
Nortech	ADC-MRF	97.19	6.57
Nortech	Residue	768.93	50.03
Nortech	Returns	1.83	1.00
Nortech	ROAD TRASH	0.18	1.10
Nortech	X-MSW-LAND	1.57	1.38
Other Commercial Account	C&D LANDFL	37.47	9.57
Other Commercial Account	C&D-LF-TWW	9.83	1.19
Other Commercial Account	MSW-LAND	6.06	2.23
Other Commercial Account	SLUDGE	30.26	2.39
Self Haul	C&D LANDFL	22.58	9.36
Self Haul	C&D-LF-TWW	4.51	1.40
Self Haul	MSW-LAND	3.47	1.85

Weekends

Source	Material	Tonnage	Vehicle Count
Hauler	C&D LANDFL	35.70	3.00
Hauler	C&D-LF-TWW	0.00	0.00
Hauler	DRIED SLDG	0.00	0.00
Hauler	FOOD WASTE	18.45	2.11
Hauler	H20 SLUDGE	0.00	0.00
Hauler	MSW-LAND	4.81	1.00
Hauler	SLUDGE	0.00	0.00
Nortech	ADC-C&D	26.90	2.00
Nortech	ADC-MRF	47.07	3.33
Nortech	Residue	495.62	29.25
Nortech	Returns	0.00	0.00
Nortech	ROAD TRASH	0.00	0.00
Nortech	X-MSW-LAND	2.34	2.40
Other Commercial Account	C&D LANDFL	11.83	2.33
Other Commercial Account	C&D-LF-TWW	0.00	0.00
Other Commercial Account	MSW-LAND	0.00	0.00
Other Commercial Account	SLUDGE	0.00	0.00
Self Haul	C&D LANDFL	11.14	5.00
Self Haul	C&D-LF-TWW	0.00	0.00
Self Haul	MSW-LAND	0.00	0.00

Peak Day **Wednesday February 1, 2017**

Source	Material	Tonnage	Vehicle Count
Hauler	C&D LANDFL	54.82	11.00
Hauler	C&D-LF-TWW	0.00	0.00
Hauler	DRIED SLDG	0.00	0.00
Hauler	FOOD WASTE	21.97	3.00
Hauler	H20 SLUDGE	0.00	0.00
Hauler	MSW-LAND	413.14	40.00
Hauler	SLUDGE	71.78	7.00
Nortech	ADC-C&D	0.00	0.00
Nortech	ADC-MRF	141.03	9.00
Nortech	Residue	1,043.04	73.00
Nortech	Returns	0.00	0.00
Nortech	ROAD TRASH	0.00	0.00
Nortech	X-MSW-LAND	0.00	0.00
Other Commercial Account	C&D LANDFL	53.30	12.00
Other Commercial Account	C&D-LF-TWW	0.00	0.00
Other Commercial Account	MSW-LAND	11.61	4.00
Other Commercial Account	SLUDGE	0.00	0.00
Self Haul	C&D LANDFL	0.00	0.00
Self Haul	C&D-LF-TWW	34.44	19.00
Self Haul	MSW-LAND	5.56	10.00

Note: peak day based on peak disposal quantities (e.g. does not include ADCs)

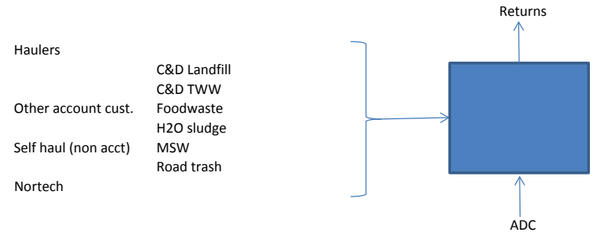
The landfill is not currently operated on the weekends. However, in some situations the WPWMA (Nortech) has had to operate the landfill on the weekends. The above numbers reflect the average of the nine (9) days in FY 2016/17 that the landfill was operated.

Code descriptions

C&D LANDFL	Construction and demolotion debris sent directly to the landfill
C&D-LF-TWW	Treated wood waste sent directly the landfill
DRIED SLDG	Dried wastewater treatement plant sludge - used as an ADC
FOOD WASTE	Commercial food waste (sloppy MSW) loads sent directly to the landfill
H20 SLUDGE	Water treatment plant sludge.
MSW-LAND	Municipal solid waste send directly to the landfill
SLUDGE	Wastewater treatment plant sludge
ADC-C&D	ADC generated at the MRF C&D processing area
ADC-MRF	ADC generated at the MRF from MSW
Residue	Residue from the MSW and C&D operations
Returns	Recyclable materials consolodated at the landfill and returned to the MRF
ROAD TRASH	Road side litter pick up material
X-MSW-LAND	MSW delivered to the public tipping area and subsequently hauled to the landfill.

Haulers Recology, City of Roseville, City of Lincoln

Flow Diagram



All Days

Source	Material	Tonnage	Vehicle Count
Hauler	FOOD-MRF	11.22	1.00
Hauler	GREEN WST.	94.80	13.64
Nortech	INT-COMP	266.62	12.53
Nortech	O-COMPST	82.33	3.74
Nortech	OVERS	60.76	2.60
Nortech	RESIDUE GW	6.30	1.28
Other Commercial Account	GREEN WST.	56.09	14.88
Other Commercial Account	O-COMPST	30.17	1.41
Other Commercial Account	Y-GRN-ZWAL	8.19	4.41
Self Haul	GREEN WST.	5.55	6.29
Self Haul	Y-GRN-ZWAL	80.93	55.64
	into processing/gring	245.56	94.86
	into compost area	277.83	13.53
	Finished compost	123.71	6.15

Weekdays

Source	Material	Tonnage	Vehicle Count		
Hauler	FOOD-MRF	11.22	1.00	11.216735	
Hauler	GREEN WST.	102.14	14.73	6.9351457	
Nortech	INT-COMP	187.60	8.68		
Nortech	O-COMPST	84.24	3.83		
Nortech	OVERS	58.47	2.52		
Nortech	RESIDUE GW	6.30	1.28		
Other Commercial Account	GREEN WST.	65.50	17.11	3.8288645	
Other Commercial Account	O-COMPST	28.18	1.35		
Other Commercial Account	Y-GRN-ZWAL	7.55	3.94	1.9130553	
Self Haul	GREEN WST.	5.90	6.75	0.8746091	
Self Haul	Y-GRN-ZWAL	64.56	43.04	1.5001291	
	into processing/gring	**245.65**	**188**		
	into compost area	198.82	9.68		
	Finished compost	**123.64**	**6.18**		

Weekends

Source	Material	Tonnage	Vehicle Count		
Hauler	FOOD-MRF	0.00	0.00		
Hauler	GREEN WST.	11.49	1.35	8.527096774	
Nortech	INT-COMP	669.87	32.17		
Nortech	O-COMPST	62.51	2.76		
Nortech	OVERS	71.84	3.00		
Nortech	RESIDUE GW	0.00	0.00		
Other Commercial Account	GREEN WST.	2.69	2.24	1.202427184	
Other Commercial Account	O-COMPST	38.36	1.67		
Other Commercial Account	Y-GRN-ZWAL	10.97	6.43	1.707348703	
Self Haul	GREEN WST.	4.58	5.02	0.911861472	
Self Haul	Y-GRN-ZWAL	122.41	87.56	1.397926599	
	into processing/gring	152.14	102.60		
	into compost area	**669.87**	**32.17**		
	Finished compost	100.86	4.43		

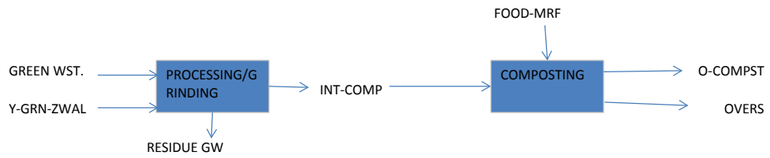
Peak Day **Saturday May 13, 2017**

Source	Material	Tonnage	Vehicle Count
Hauler	FOOD-MRF	0.00	0.00
Hauler	GREEN WST.	42.15	2.00
Nortech	INT-COMP	0.00	0.00
Nortech	O-COMPST	0.00	0.00
Nortech	OVERS	0.00	0.00
Nortech	RESIDUE GW	0.00	0.00
Other Commercial Account	GREEN WST.	0.41	1.00
Other Commercial Account	O-COMPST	46.84	2.00
Other Commercial Account	Y-GRN-ZWAL	4.00	3.00
Self Haul	GREEN WST.	6.76	6.00
Self Haul	Y-GRN-ZWAL	240.50	176.00
	into processing/gring	293.82	188.00
	into compost area	0.00	0.00
	Finished compost	46.84	2.00

Code descriptions

FOOD-MRF	Source seperated commercial food waste delivered by the City of Roseville and blended with greenwaste as part of ASP pilot study
GREEN WST.	Green waste received - measured by the ton
INT-COMP	Ground greenwaste transported to and placed on the compost pad
O-COMPST	Finished and marketed compost
OVERS	Woody fraction from compost, screened out at end of the composting process. Typically sent out as biomass but sometimes used on-site for erosion control purposes.
RESIDUE GW	
Y-GRN-ZWAL	Green waste received - measured by the cubic yard. CF: 328 lb/cy
Haulers	Recology, City of Roseville, City of Lincoln

Flow Diagram



Appendix 2I
Phase I Stakeholder Engagement

Stakeholder Engagement

Following the December 2017 Western Placer Waste Management Authority (WPWMA) Board meeting, WPWMA staff and the Jacobs team conducted a variety of stakeholder engagement to solicit feedback on the Plan concepts. The attached table summarizes the engagement activities. Through those activities, WPWMA staff met with the following stakeholders:

Elected Officials, Boards, Councils

- Placer County Board of Supervisors
- Roseville City Council
- Rocklin City Council
- Lincoln City Council
- Pioneer Energy

Community and Business Groups

- Rocklin Chamber of Commerce Government Relations Committee
- Lincoln Chamber of Commerce
- Placer County Associations of Realtors
- North State Building Industry Association

Environmental Groups

- Sierra Club
- Audubon Society

Large Landowners

- Placer Ranch, Inc.
- United Auburn Indian Community
- AKT Development Corp.
- Placer Athens Limited Partnership

Regulators

- Placer County Air Pollution Control District
- CalRecycle
- Regional Water Quality Control Board

General Public

- Residents from the Blue Oaks, Westpark, Fiddyment Farms, and Amoruso neighborhoods were engaged as part of the annual community meeting to discuss odors.

2018 Stakeholder Engagement Activities

	February	March	April	May	June	July	August	September	October	November	December
WPWMA Board (2nd Thurs)			Project Update: General 4/12		Project Update: Stakeholder Engagement 6/14	Project Update: Engagement & Evaluation Process 7/12		Project Update: MODA Criterion Approval 9/13	Project Update: Concept Preview 85% Level 10/11		Recommendation to Move into CEQA 12/13
Member Agencies	Meeting for Member Agency Executives 2/26			Member Agency BOS / Council Presentations: 5/2 Roseville 5/8 Rocklin 5/22 County 5/22 Lincoln	Project Update to Member Agency Executives (Email)				Project Update to Member Agency Executives (Email)		
Advisory Committee (2nd Thurs)	Meeting 2/15	Meeting 3/15	Meeting 4/12	~~Meeting 5/10~~	Meeting 6/14	~~Meeting 7/12~~	Meeting 8/28	Meeting 9/19	Meeting 10/11	Meeting 11/8	Meeting 12/13
Regulators								9/21 APCD 9/27 LEA/CalRecycle	10/15 Water Board	Project Update (Email)	
Adjacent Landowners							8/2 Placer Ranch 8/22 Placer Athens (Kwan)	9/10 Email Update 9/26 AKT	Project Update (Email)	Project Update (Email)	
United Auburn Indian Community							8/6 UAIC	9/10 Email Update	Project Update (Email)	Project Update (Email)	
Developers, Chambers, SWLTF, Comm., Environ. Grps								9/5 Roc Chamber 9/18 Linc Chamber 9/18 PCAR 9/19 BIA 9/24 Pioneer	10/26 Ros Chamber	11/1 SWLTF & Project Update (Email)	TBD Placer Joint Chambers
Adjacent Neighborhood Groups								Engage HOA & Neighborhood Association Leaders	10/23 Annual Odor Workshop	Project Update (Email)	
Project Progress	Identification of No-Project Alternatives Verification of Growth Estimates			Concept Refinement		MODA Development	MODA Execution & Evaluation of Engagement Feedback		Concept Finalization		

Renewable Placer: Waste Action Plan

WESTERN PLACER WASTE MANAGEMENT AUTHORITY

Proactively meeting the infrastructure needs of western Placer County areas through responsible solid waste management.

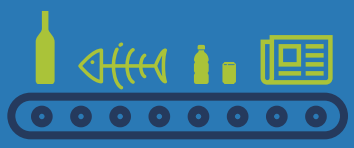
THE ISSUES

- **California** is aggressively expanding regulations to reduce materials going to landfills
- **75%** Required organics diversion from landfills by 2025

- **Western Placer County** on pace to outgrow existing solid waste facilities due to increasing population
- **200%** Expected population increase in Placer County and its cities by 2050

China and other international recyclers are closing their doors, destabilizing markets and impacting solid waste facility capacities across the US, including Placer County.

CONSEQUENCES OF INACTION



The WPWMA's composting and recycling facilities will not be able to accept additional waste within **2–5 years**

Placer County jurisdictions could be forced to:

build additional solid waste facilities

OR

transport waste to other landfills outside the county or state

Which will require significant time and resources and could result in:

- Higher rates passed to customers through garbage bills
- Loss of local control over rates and services provided to solid waste customers

BOTTOM LINE

Without modification, WPWMA's existing facilities lack capacity necessary to meet regulatory and regional growth demands. Failure to address waste management infrastructure needs now will lead to significant cost implications for western Placer County jurisdictions, residents and businesses in the near future.

THE PLAN

The WPWMA is planning ***now*** to ensure that western Placer County is well positioned to meet the needs of residents and businesses into the future while complying with regulations, supporting planned regional growth, and creating opportunity for innovation.

PROJECT GOALS

- Increase facility recycling and landfill diversion
- Create opportunities for industrial innovation and economic growth
- Provide capacity to support current and future population and development
- Provide a safeguard for future generations by maintaining local control and stable rates
- Ensure compliance with expanding regulations
- Enhance operational compatibility with current and future neighboring land uses

PROJECT CONCEPTS

The project concepts represent possible facility configurations to meet the project goals. The concepts focus on the four critical facility functions, including:

Landfill
Provide capacity to accommodate regional growth, maintain control of costs, disposal methods

Composting
Process additional materials to meet regulations; minimize associated odors

Construction & Demolition
Increase operating capacity, efficiency, and material diversion; maintain competitive rates

Public Drop-off
Maintain safety and convenience; reduce traffic congestion

Visit WPWMA.com for project conceptual layouts

PROCESS

Engage
a wide range of stakeholders and interested parties for input on project concepts

Evaluate
facility needs in a transparent process by conducting studies to support project decisions

Implement
selected project concept based on informed WPWMA Board decision

WESTERN PLACER
WASTE MANAGEMENT AUTHORITY

Stay informed

WPWMA.COM

Appendix 2J
Plan Concept Narratives

PLAN CONCEPT 0
EXISTING SITE RECONFIGURED

Ability to Meet Project Goals

Increase recycling rates	X
Maintain local control	
Regulatory compliance	X
Provide long-term recycling capacity	X
Provide long-term disposal capacity	
Enhance compatibility	X
Opportunity for innovation	

General Description

All future solid waste activities will occur exclusively on the existing permitted 320-acre parcel. The WPWMA could elect to continue leasing to tenants or sell the western and eastern properties.

Processing and Recycling Operations

Core processing and recycling operations (MRF, C&D and composting) will occur on the northern portion of the existing property. Systems will be sized to accommodate anticipated material growth rates over the next 25 years. Maintaining relatively close and compact proximity of these operations to each other is intended to initially yield increased operational efficiencies and reduce operating costs. Flexibility to further expand or modify these operations in the future may be hampered by lack of available space between operations.

Landfill Operations

Modules 1, 2, 10 and 11 (closed, unlined modules) will be immediately excavated and relocated to a lined module to facilitate expansion of processing and recycling operations. The space currently allocated for future Modules 8 and 9 will be utilized for processing and recycling operations and no longer available for landfilling. The overall permitted capacity of the landfill will be reduced from ~36.5 million cubic yards to ~17.7 million cubic yards, yielding an estimated remaining landfill life of approximately 30 years. Upon closure, wastes will continue to be received at the facility, processed for diversion, and the residuals transferred via long-haul trucks to a third-party landfill. Potential local options include Recology's Ostrom Road Landfill, Sacramento County's Kiefer Landfill, and Yolo County's Central Landfill.

Compatible Operations and Opportunities for Innovation

Space for compatible operations, emerging technology pilot studies and collaboration with universities is not included in this concept. The WPWMA could potentially pursue a separate project in the future to permit the western and eastern properties for such uses.

Enhanced Compatibility

Facility odors could be reduced by utilizing ASP composting technologies and earlier closure of the landfill, although opportunities to employ new odor-reducing waste processing technologies may be more limited (compared to Concepts 1 and 2) due to lack of available space

PLAN CONCEPT 1
LANDFILL EAST

Ability to Meet Project Goals

Increase recycling rates	X
Maintain local control	X
Regulatory compliance	X
Provide long-term recycling capacity	X
Provide long-term disposal capacity	X
Enhance compatibility	X
Opportunity for innovation	X

General Description

The majority of the 158-acre eastern property will be reserved for future landfill capacity. MRF and C&D operations will remain proximate to each other on the existing 320-acre property. Composting and other organics management will occur on the 480-acre western property. Portions of the western property will be reserved for compatible third-party operations.

Processing and Recycling Operations

Systems will be sized to accommodate anticipated material growth rates over the next 25 years. Placement on the western property provides additional space specifically allowing for expansion of composting operations as necessitated by current and anticipated future organics regulations.

Landfill Operations

Future filling operations could occur on the eastern property. Modules 1, 2, 10 and 11 (closed, unlined modules) will be excavated and relocated to a lined module to facilitate expansion of processing, recycling operations and additional landfill space if necessary. Excavation and relocation can be phased as needed or as finances allow. The space currently allocated for future Module 9 will be utilized for processing and recycling operations and no longer available for landfilling. Landfill capacity will increase from ~36.5 million cubic yards to ~75.8 million cubic yards, yielding an estimated remaining landfill life of approximately 90 years.

Compatible Operations and Opportunities for Innovation

A significant portion of the western property will be available for compatible operations, emerging technology pilot studies and collaboration with universities. Doing so will serve to increase the recovery and marketability of materials and produce alternative fuels and energy.

Enhanced Compatibility

Concept 1 provides the WPWMA the greatest opportunity to employ new odor-reducing waste processing technologies such as ASP composting. Landfill odors could persist for a longer period compared to Concepts 0 and 2 due to a longer projected remaining life.

PLAN CONCEPT 2
LANDFILL WEST

Ability to Meet Project Goals

Increase recycling rates	X
Maintain local control	X
Regulatory compliance	X
Provide long-term recycling capacity	X
Provide long-term disposal capacity	X
Enhance compatibility	X
Opportunity for innovation	X

General Description

Over half of the 480-acre western property will be reserved for future landfill capacity. All non-landfill solid waste activities will occur exclusively on the existing permitted 320-acre parcel. Portions of the eastern property will be reserved for compatible third-party operations and could also include a biological reserve area.

Processing and Recycling Operations

Systems will be sized to accommodate anticipated material growth rates over the next 25 years. Maintaining relatively close and compact proximity of these operations to each other should initially yield increased operational efficiencies and reduce operating costs. Flexibility to further expand or modify these operations in the future may be hampered by the lack of available, unencumbered space between the individual operations.

Landfill Operations

Future filling operations could occur on the western property. Modules 1, 2, 10 and 11 (closed, unlined modules) will be immediately excavated and relocated to a lined module to facilitate expansion of processing and recycling operations. The space currently allocated for future Modules 8 and 9 will be utilized for processing and recycling operations and no longer available for landfilling. Landfill capacity will increase from ~36.5 million cubic yards to ~54.3million cubic yards, yielding an estimated remaining landfill life of approximately 70 years.

Compatible Operations and Opportunities for Innovation

A significant portion of the eastern property will be available for compatible operations, emerging technology pilot studies and collaboration with universities, which could serve to increase recycling rates and produce alternative fuels and energy.

Enhanced Compatibility

Concept 2 provides the WPWMA some opportunity to employ new odor-reducing waste processing technologies such as ASP composting. Landfill odors could persist for a longer period compared to Concepts due to a longer project remaining life.

Timing of Elements for Plan Concepts 0, 1, and 2

Year	Plan Concept 0	Plan Concept 1	Plan Concept 2
0 (2022)	Compost - Temporary Positive ASP System Compost - ASP Curing System (build pad only) Compost - Dedicated Stormwater Ponds Compost - Miscellaneous Equipment Unlined Area Excavation/Backfill (50%) Stockpile Relocation (50% of first relocation) Main Entrance – Initial Retrofit Compost Pond Removal Wetlands Mitigation	Compost - Temporary Positive ASP System Wetlands Mitigation	Compost - Temporary ASP Compost - ASP Curing System (build pad only) Compost - Dedicated Stormwater Ponds Compost - Miscellaneous Equipment Unlined Area Excavation/Backfill (50%) Stockpile Relocation (50% of first relocation) Main Entrance – Initial Retrofit Compost Pond Removal Wetlands Mitigation
1 (2023)	Public Area (entire area) Landfill Construction (module construction) Unlined Area Excavation/Backfill Primary Maintenance Facility New Stormwater Ponds (50%) Geotechnical Investigation (one of two investigations) Facility Beautification Site-wide Demolition and Disposal	Public Area – Roadways only C&D Area Compost - Green Waste Pad Compost - Wood Waste Pad Compost - Outdoor Receiving Area Compost - Screening and Product Storage Pad Compost - Active Composting System (two of four ASPs) Compost - Biofilter (two of four biofilters) Compost - ASP Curing System (two of four ASPs) Compost - Dedicated Stormwater Ponds Compost - Miscellaneous Equipment Western Entrance Primary Maintenance Facility Satellite Maintenance Facility New Stormwater Ponds (C&D and Public Area ponds, LF pond 50%) Main Site HHW Building Special Permits (Solid Waste Facility Permit for Permanent ASP Only) Geotechnical Investigation (one of six investigations) Facility Beautification Site-wide Demolition and Disposal (partial site)	Public Area (entire area) Landfill Construction (module construction) Unlined Area Excavation/Backfill (50%) Primary Maintenance Facility New Stormwater Ponds (50%) Geotechnical Investigation (one of six investigations) Facility Beautification Site-wide Demolition and Disposal
2 (2024)	Unlined Area Excavation/Backfill (fill only) Admin Building New Stormwater Ponds (50%) Facility Beautification (Admin Building landscaping)	Admin Building New Stormwater Ponds (remaining LF pond 50%) Facility Beautification (Admin Building landscaping) Shared Site Utilities	Unlined Area Excavation/Backfill (fill only) Admin Building New Stormwater Ponds (50%) Facility Beautification (Admin Building landscaping)
3 (2025)	C&D Area	Public Area – Buyback, HHW, and Tipping Area only Overpass Compost Pond Removal	C&D Area
4 (2026)		Site-wide Demolition and Disposal (partial site)	
5 (2027)	Main Entrance Upgrade Facility Beautification (Main Entrance landscaping)	Compost - Active Composting System (third of four ASPs) Compost - Biofilter (third of four biofilters) Compost - ASP Curing System (for one of two ASPs) Main Entrance Upgrade Facility Beautification (Main Entrance landscaping)	Main Entrance Upgrade Facility Beautification (Main Entrance landscaping)
6 (2028)	Compost - Green Waste Pad (50% and specialty equipment)	Public Area - Reuse Store Area only	Compost - Green Waste Pad (50%)

Timing of Elements for Plan Concepts 0, 1, and 2

Year	Plan Concept 0	Plan Concept 1	Plan Concept 2
	Compost - Wood Waste Pad (50% and specialty equipment) Compost - Outdoor Receiving Area (50% and specialty equipment) Compost - Screening and Product Storage Pad (50% and specialty equipment) Compost - Active Composting System (two of four ASP beds) Compost - Biofilter (two of four ASP beds and biofilters) Compost - ASP Curing System (two of four ASP beds and biofilters) Stockpile Relocation (50% first relocation) Recyclables Storage Building Special Permits (Compost Solid Waste Facility Permit) Geotechnical Investigation (second of two investigations)	Recyclables Storage Building Geotechnical Investigation (second of six investigations)	Compost - Wood Waste Pad (50%) Compost - Outdoor Receiving Area (50%) Compost - Screening and Product Storage Pad (50%) Compost - Active Composting System (two of four ASP beds and biofilters) Compost - Biofilter (two of four ASP beds and biofilters) Compost - ASP Curing System (two of four ASP beds and biofilters) Stockpile Relocation (first relocation 50%) Recyclables Storage Building Special Permits (Compost Solid Waste Facility Permit) Geotechnical Investigation (two of six investigations)
8 (2030)		Special Permits (for Environmental/Land Use)	
9 (2031)		Stockpile Relocation	
10 (2032)	Landfill Construction (module construction) Stockpile Relocation (second relocation) Shared Site Utilities	Compost - Active Composting System (fourth of four ASPs) Compost - Biofilter (fourth of four ASPs) Compost - ASP Curing System (fourth of four ASPs) Landfill Construction (module construction)	Landfill Construction (two of seven) Stockpile Relocation (second relocation) Shared Site Utilities
11 (2033)	Compost - Green Waste Pad (25%) Compost - Wood Waste Pad (25%) Compost - Outdoor Receiving Area (25%) Compost - Screening and Product Storage Pad (25%) Compost - Active Composting System (third of four ASP beds and biofilters) Compost - Biofilter (three of four ASP beds and biofilters) Compost - ASP Curing System (third of four ASP beds and biofilters) Landfill Closure (partial)	Geotechnical Investigation (three of six investigations)	Compost - Green Waste Pad (25%) Compost - Wood Waste Pad (25%) Compost - Outdoor Receiving Area (25%) Compost - Screening and Product Storage Pad (25%) Compost - Active Composting System (third of four ASP beds and biofilter) Compost - Biofilter (third of four ASP beds and biofilter) Compost - ASP Curing System (third of four ASP beds and biofilter) Landfill Closure (partial) Geotechnical Investigation (three of six investigations)
16 (2038)	Compost - Green Waste Pad (25%) Compost - Wood Waste Pad (25%) Compost - Outdoor Receiving Area (25%) Compost - Screening and Product Storage Pad (25%) Compost - Active Composting System (fourth of four ASP beds and biofilters) Compost - Biofilter (fourth of four ASP beds and biofilters) Compost - ASP Curing System (fourth of four ASP beds and biofilters)	Geotechnical Investigation (four of six investigations)	Compost - Green Waste Pad (25%) Compost - Wood Waste Pad (25%) Compost - Outdoor Receiving Area (25%) Compost - Screening and Product Storage Pad (25%) Compost - Active Composting System (fourth of four ASP beds and biofilter) Compost - Biofilter (fourth of four ASP beds and biofilter) Compost - ASP Curing System (fourth of four ASP beds and biofilter) Geotechnical Investigation (four of six investigations)
20 (2042)	Landfill Construction (module construction) Stockpile Relocation (third relocation)	Landfill Construction (module construction)	Landfill Construction (module construction)
21 (2043)	Landfill Closure (partial)	Landfill Closure (partial) Geotechnical Investigation (five of six investigations)	Landfill Closure (partial) Geotechnical Investigation (five of six investigations)
23 (2045)			Special Permits (environmental/land use permits)
25 (2047)			Western Entrance Overpass
26 (2048)	Landfill Closure (remaining closure) MRF Upgrade to TS	Geotechnical Investigation (six of six investigations)	Geotechnical Investigation (six of six investigations)
27 (2049)			Satellite Maintenance Facility

Timing of Elements for Plan Concepts 0, 1, and 2

Year	Plan Concept 0	Plan Concept 1	Plan Concept 2
30 (2052)		Landfill Construction (module construction)	Landfill Construction (module construction)
31 (2053)		Landfill Closure (partial)	Landfill Closure (partial)
40 (2062)		Landfill Construction (module construction)	Landfill Construction (module construction)
41 (2063)		Landfill Closure (partial)	Landfill Closure (partial)
48 (2070)		Unlined Area Excavation/Backfill (50%)	
49 (2071)		Unlined Area Excavation/Backfill (remaining 50%)	
50 (2072)		Landfill Construction (module construction)	Landfill Construction (module construction)
51 (2073)		Landfill Closure (partial)	Landfill Closure (partial)
60 (2082)		Landfill Construction (module construction)	Landfill Construction (module construction)
61 (2083)		Landfill Closure (partial)	Landfill Closure (partial)
66 (2088)			Landfill Closure (remaining closure) MRF Upgrade to TS
70 (2092)		Landfill Construction (module construction)	
71 (2093)		Landfill Closure (partial)	
80 (2102)		Landfill Construction (module construction)	
81 (2103)		Landfill Closure (partial)	
86 (2108)		Landfill Closure (remaining closure) MRF Upgrade to TS	

Notes:

This table provides a summary of the initial capital outlays for this project (capital replacement costs are not presented in this table). During the life of the project, there are some years that don't have any initial capital expenditures. Only years with initial capital expenditures are shown.

ASP = aerated static pile
HHW = household hazardous waste
TS = transfer station