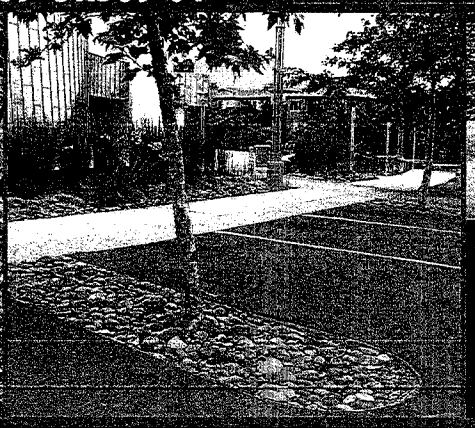
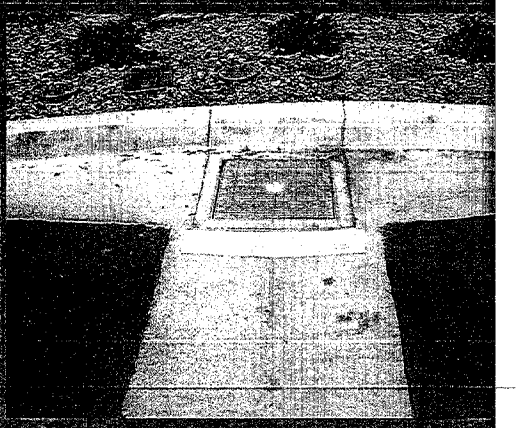
PILOT CHANNEL BORINGS AND SEDIMENT CHARACTERIZATION REPORT

FINAL REPORT

TASK ORDER #9 DOC ID# CSD-TM-09-URS09-01

MARCH 16, 2011

PROGRAM ASSESSMENT SERVICES
BMP DEVELOPMENT & ENGINEERING
ASSET MANAGEMENT SERVICES
ENVIRONMENTAL ASSESSMENT & PERMITTING
STRATEGIC PLANNING
MONITORING & INVESTIGATIONS

URS

CITY OF SAN DIEGO

Not covered by grant.

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Tables

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List of Acronyms and Abbreviations

bgs	below ground surface
Cal EPA	California Environmental Protection Agency
CHHSLs	California Human Health Screening Levels
City	City of San Diego
COPCs	chemicals of potential concern
DEH	San Diego County Department of Environmental Health
DEHP	di(2-ethyl hexyl)phthalate
DTSC	Department of Toxic Substances Control
ERL	Effects Range-Low
ERM	Effects Range-Medium
MDLs	Method detection limits
mg/kg	milligrams per kilogram
mg/l	milligrams per liter
NOAA	National Oceanic and Atmospheric Administration
OCPs	organochlorine pesticides
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PEA	Preliminary Endangerment Assessment
PG	Professional Geologist
PRGs	Preliminary Remediation Goals
RCRA	Resource Conservation and Recovery Act
RLs	reporting limits
RSLs	Regional Screening Levels
RWQCB	Regional Water Quality Control Board
SM	silty sand
SP-SM	poorly graded sand with silt
SQGs	Sediment Quality Guidelines
SQuiRTs	Screening Quick Reference Tables
STLC	Soluble Threshold Limit Concentration
SVOCs	Semi-volatile organic compounds
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
TTLC	Total Threshold Limit Concentration
ug/kg	micrograms per kilogram
USCS	Unified Soil Classification System
US EPA	United States Environmental Protection Agency
WET	Waste Extraction Test

SECTION 1 INTRODUCTION

This report summarizes the results of a field investigation conducted for the City of San Diego (City), Storm Water Department Pollution Prevention Division to perform a preliminary evaluation of sediment quality excavated from a portion of Smuggler's Gulch and the Pilot Channel located in the Tijuana River Valley in the southwest portion of the City of San Diego, immediately north of the U.S. – Mexico international border (Figure 1-1). The sampling and analysis activities described herein were performed under existing Task Order 9 provided by the City under contract H084440.

1.1 Purpose

The purpose of the field investigation was to perform a preliminary evaluation of sediment quality and its characteristics prior to completion of the emergency excavation of accumulated sediment that began in October 2009.

1.2 Scope of Work

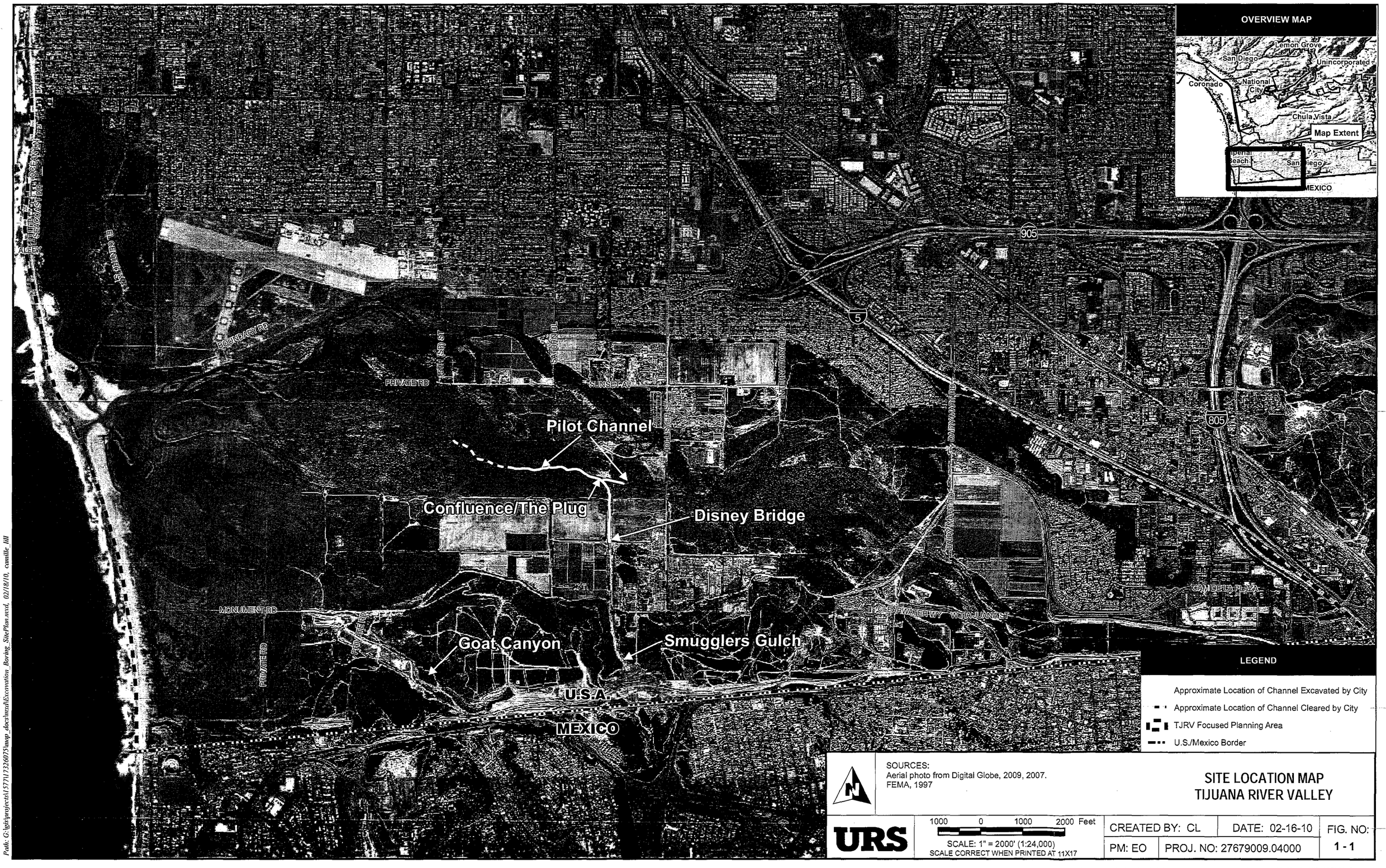
The following scope of work to accomplish the objectives of this project:

- Mobilizing a limited-access rig to drill two soil borings,
- Collecting sediment samples from the soil borings,
- Submitting the samples to a laboratory for chemical analyses,
- Submitting the samples to a geotechnical laboratory to identify the characteristics of the materials,
- Evaluating the data, and
- Preparing this report.

1.3 Background

1.3.1 Hydrology

The Smugglers Gulch drainage basin is approximately 3,532 acres (5.52 square miles), situated mostly in Tijuana, Mexico (Figure 1-1). Surface water in the basin flows from south to north across the international border and is calculated to convey peak discharges for the 2-, 10-, 50- and 100-year storms as presented in Table 1-1.



SOURCES:
Aerial photo from Digital Globe, 2009, 2007.
FEMA, 1997

SITE LOCATION MAP
TIJUANA RIVER VALLEY

URS

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Table 1-1. Smugglers Gulch Peak Discharge Frequency Distribution

Recurrence Interval	2-Year	10-Year	50-Year	100-Year
Peak Discharge (cfs)	653	1,668	3,081	3,626

Source: U.S. Army Corps of Engineers 2008.

cfs = cubic feet per second

1.3.2 Channel Maintenance History

According to a letter submitted by the City to the Regional Water Quality Control Board (RWQCB) in May 2004, the City has maintained an approximately 1,500-foot portion of the Smugglers Gulch Channel north of the Monument Road "Arizona Crossing" since 1999. The channel clearing activities have been conducted under a series of permits filed with a number of regulatory oversight agencies. Information provided below regarding these maintenance activities appears in the May 2004 correspondence between the City and the RWQCB. These maintenance operations have been conducted to facilitate the flow of runoff to the Tijuana River and the Tijuana River Valley area, and to reduce the potential of flooding. The need to remove sediment from Smugglers Gulch channel is evaluated based on an engineering survey of the channel depth compared to the required design depth on as-needed basis.

The removal operations utilize backhoes, excavators, scrapers, and bulldozers to remove trash, tires, sediment, and debris that have accumulated from Disney Bridge to the end of the Pilot Channel during wet weather flows. Grading is limited vertically by design grade and horizontally by established channel banks, and according to established engineering plans. Trash, sediment, debris, and vegetation removed from the Tijuana River Valley were previously disposed at the Miramar Landfill. There are records of the types and volumes of materials excavated and disposed from various locations maintained by the City beginning in 1999, but information specific to each area was not documented until 2001. In that year, the Smugglers Gulch channel was excavated from September 2 - 29. Approximately 10,644 cubic yards (cy) of trash, sediment and debris was removed and disposed. In the following year, considerably less sediment was removed from the channel between October 30 – November 1, 2002 and approximately 668 cubic yards of trash, sediment and debris was removed. A flow line was re-established in Smugglers Gulch channel through simple grading in 2003, and no material was removed.

In late 2008, City maintenance staff removed and stockpiled approximately 600 cubic yards (cy) of sediment from Smuggler's Gulch between Monument Road and the Disney Bridge. The sediment was placed in a stockpile on City property adjacent to Monument Road. URS Corporation (URS) conducted sampling of a portion of the remaining stockpile in April 2009 to characterize chemicals of potential concern (COPCs) that may be present in these materials so that possible disposal and/or reuse scenarios could be evaluated. Grain-size analyses were also conducted to evaluate whether the materials might be suitable for beach replenishment. Based on the size of the remaining stockpile, five samples were collected for the following analyses: Title 22 metals, total petroleum hydrocarbons (TPH), semi-volatile organic compounds [SVOCs, including polynuclear aromatic hydrocarbons (PAHs)], organochlorine pesticides (OCPs) and polychlorinated biphenyls (PCBs).

The analytical results were compared to human health and ecological risk screening and hazardous waste criteria. Certain metals, PAHs and OCPs were detected in one or more of the samples. None of these constituents were present at concentrations above human health screening criteria for residential property use. Residential use is the most conservative exposure scenario and as such, unrestricted use of the sediment could be possible. From an ecological perspective comparison of the data to Effects Range-Low (ERLs), there is only one compound, 4,4'-DDT that was present in 4 of 5 of the samples analyzed that exceeded its screening level. It was concluded that this compound may require further evaluation based on the intended reuse of the sediment, particularly if it were to be used in the marine environment. Comparison of the data to hazardous waste criteria indicated that the sediment in the stockpile was non-hazardous. As such, it would appear that the sediment is suitable for unrestricted reuse, provided that it were free of trash and other debris. Grain-size analyses revealed that the materials consisted of poorly graded sand with silt (SP-SM). Based on the grain-size distribution, these materials could be suitable for beach replenishment, considering the characteristics of a receiving location. It was concluded that the sand may have other possible beneficial uses since it does not contain considerable fines.

1.3.3 Emergency Channel Excavation

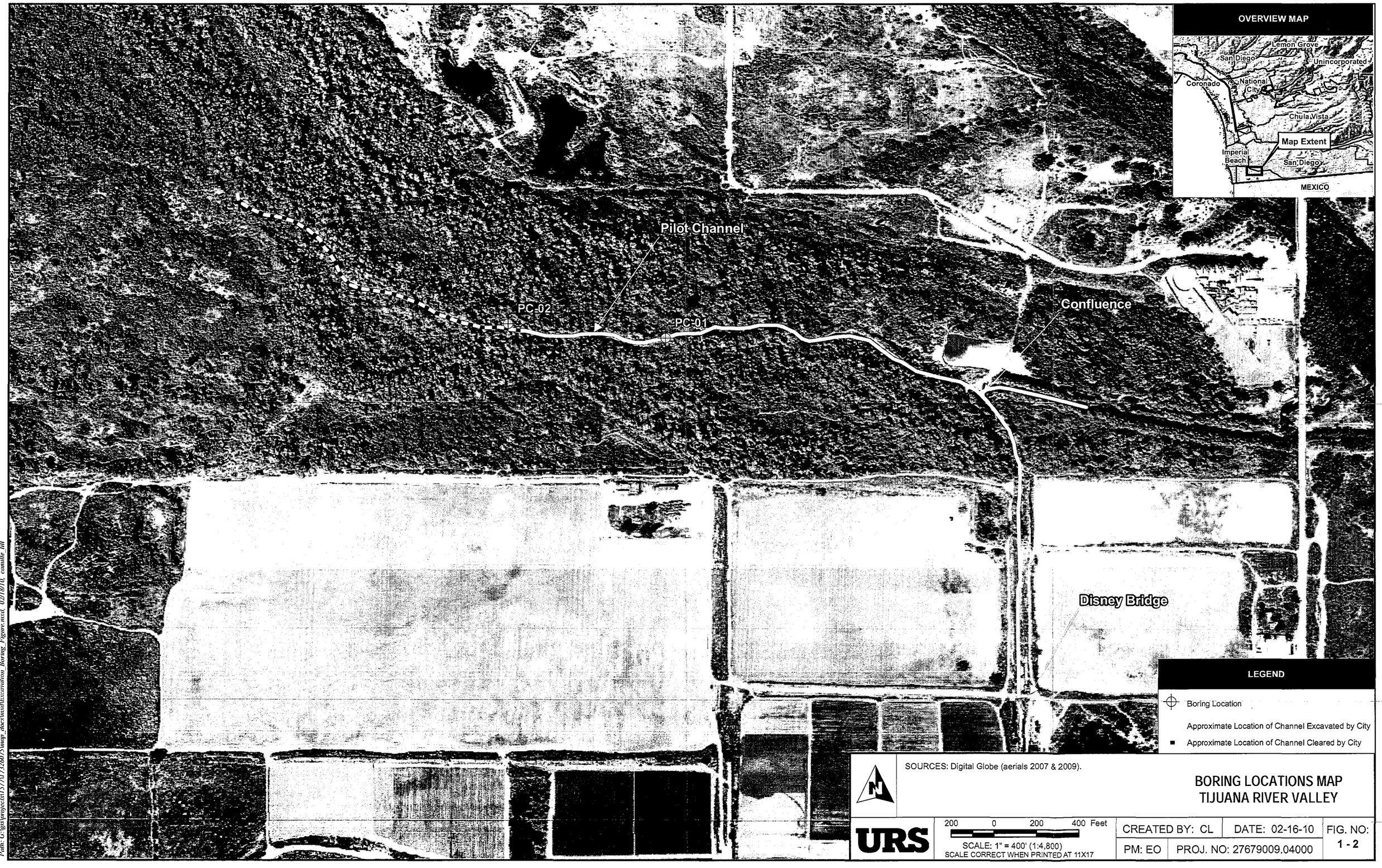
In Summer 2009, the City began accelerated permitting activities with the resource agencies in order to conduct an emergency excavation program for Smuggler's Gulch north of the Disney Bridge and the Pilot Channel. The Pilot Chanel extends from the confluence of the Smuggler's Gulch channel and the main Tijuana River for an approximate distance of 4,000 feet to the west. The program was conducted to abate potential hazards associated with flooding of the valley this winter, as El Niño and possibly heavy precipitation was being predicted. The channel was excavated from the Disney Bridge northward and then westward from the confluence with the main Tijuana River Channel. Excavation began in early October 2009 and was stopped following the first major storm event that occurred on November 28, 2009.

Excavation continued from January 9 to 17, 2010 in which approximately 3 feet of sediment that accumulated in the channel from Disney Bridge to the Confluence was removed. During this time, 5 feet of sediment was excavated from the Confluence eastward for approximately 500 feet of the Pilot Channel (Bill Tamargo, pers. comm.). The westernmost 2,000 feet of the Pilot Channel was cleared, but not excavated due to the rain events that occurred in late November 2009. The City requested URS to conduct sediment sampling from borings at two locations prior to excavation. Field procedures and the results of analytical testing are described in the following sections of this report.

SECTION 2 FIELD PROCEDURES

On November 16, 2009, two soil borings were drilled by Baja Exploration, a California-licensed drilling contractor located in Escondido, California under the oversight of a URS geologist at the locations shown on Figure 1-2. The borings were drilled in the Pilot Channel to the west of the confluence of Smuggler's Gulch and one of the Tijuana River channels. Drilling was conducted in accessible areas along the Pilot Chanel, where the City personnel had removed vegetation and trash from the ground surface. The borings were drilled using a tracked, limited-access rig with 8-inch diameter hollow-stem augers. The borings were drilled to depths of approximately 10 feet, above the level of the water table. Since the borings were shallower than 20 feet and did not encounter the water table, no boring permit was required by the San Diego County Department of Environmental Health (DEH).

The borings were logged in accordance with the Unified Soil Classification System (USCS) by a URS geologist under the supervision of a California Professional Geologist (PG). Sediment samples were collected from the borings continuously using a modified California sampler. Two samples from intervals in the boring containing appreciable fines were submitted to a state-certified laboratory for chemical analyses. The top (0 to 1.5 feet), middle (5 to 6.5 feet), and lower (10 to 11.5 feet) of the sample core and a composite of the entire core were submitted to URS' in-house geotechnical laboratory for grain-size analyses. The borings logs and grain-size analyses are provided in Appendix A.



LEGEND

- Boring Location
- Approximate Location of Channel Excavated by City
- Approximate Location of Channel Cleared by City

SOURCES: Digital Globe (aerials 2007 & 2009).

BORING LOCATIONS MAP
TIJUANA RIVER VALLEY

URS

200 0 200 400 Feet

SCALE: 1" = 400' (1:4,800)
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SECTION 3 LABORATORY ANALYSES AND RESULTS

3.1 Laboratory Methods

The sediment samples collected from the borings were analyzed for the following COPCs known to be present in the Tijuana River basin. These COPCs are summarized in Table 3-1 and include the common chemicals that could be present resulting from urban and agricultural activities that have historically and are currently occurring in the watershed. Many of the COPCs can be present as a result of human activities and could be present at concentrations that may pose an adverse risk to human health and the environment. Method detection limits (MDLs) and reporting limits (RLs) for specific compounds analyzed by each analytical method appear in the laboratory report provided in Appendix B.

Table 3-1. Chemical Constituent Analyses

Analyte	Analytical Method
Metals including: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium and zinc	EPA 6010B/7421
Total Petroleum Hydrocarbons (Extended Range)	EPA 8015B
Semi-volatile Organic Compounds [SVOCs, including Polynuclear Aromatic Hydrocarbons (PAHs)]	EPA 8270C
Organochlorine Pesticides (OCPs) and Polychlorinated Biphenyls (PCBs)	EPA 8081/8082

[a] EPA = U.S. Environmental Protection Agency

The samples were also subjected to geotechnical analyses to serve as a preliminary indicator of whether or not the sediment may be suitable for beach replenishment or another beneficial use. Sample analyses were proposed to include the parameters indicated in Table 3-2; however, expansion and plasticity indices were not measured since the samples did not contain appreciable fines.

Table 3-2. Geotechnical Parameter Analyses

Parameter	Analytical Procedure
Grain-size Distribution	ASTM[a] D421/422
Expansion Index	ASTM D4829
Plasticity Index	ASTM D4318

[a] American Society for Testing and Materials

3.2 Laboratory Analytical Results

3.2.1 Chemical Analyses Results

Chemical laboratory analytical results are provided for metals and organics in Table 3-4 and Table 3-5, respectively. A copy of the laboratory analytical report and chain-of-custody (COC) form are provided in Appendix B. The analytical results are described below by analytical suite.

3.2.1.1 Metals

Of the 17 metals analyzed, 12 were present at detectable concentrations in one or more of the sediment samples analyzed. The ten metals detected included: arsenic, barium, chromium, cobalt, copper, lead, mercury, nickel, vanadium and zinc. The detected ranges of each of the metals are presented in Table 3-3.

Table 3-3. Metals Analyte Detection Ranges

Analyte	Detected Ranges (mg/kg)
Antimony	1.09
Arsenic	1.51 to 1.94
Barium	35.5 to 86.2
Cadmium	0.09 to 0.31
Chromium	4.88 to 11.3
Cobalt	1.99 to 5.31
Copper	3.62 to 13.9
Lead	3.68 to 7.91
Mercury	0.02 to 0.10
Nickel	2.09 to 7.91
Vanadium	13.9 to 37.9
Zinc	19.0 to 50.0

3.2.1.2 Total Petroleum Hydrocarbons

Each of the samples was analyzed for total petroleum hydrocarbons-extended range. TPH were detected in the gasoline, diesel fuel or the heavier hydrocarbons carbon ranges of C6 to C10, C10 to C28 and C28 to C40, respectively.

3.2.1.3 Semi-volatile Organic Compounds

Of the SVOCs analyzed, there were four phthalates present in the samples analyzed, including bis(2-ethylhexyl) phthalate, butyl benzyl phthalate, di-n-butyl phthalate, and diethyl phthalate. Detected concentrations ragned from 1.85 to 264 micrograms per kilogram (ug/kg).

3.2.1.4 Polynuclear Aromatic Hydrocarbons

PAHs were present in each of the samples with the exception of sample no. PC-01-10.0 collected from boring PC-01 at approximately 10 feet below ground surface (bgs). Sample no. PC-02-01.0 from boring PC-02 contained the greatest number of PAHs at detectable concentrations. The PAHs detected included benzo(a) anthracene, benzo(b)fluoranthene, benzo(a)pyrene, chrysene, fluoranthene, phenanthrene and pyrene. Detected cocncentrations were relatively low, ranging from 2.68 to 14.3 ug/kg.

3.2.1.5 Organochlorine Pesticides and Polychlorinated Biphenyls

OCPs and PCBs were not detected at concentrations above the laboratory detection limit reported for specific compounds and congeners, respectively, in the samples analyzed.

3.2.2 Geotechnical Analyses Results

Grain-size distribution curves are provided in Appendix A for eight samples collected from the two borings. The results of the grain-size analyses indicate that the composite sample of boring PC-01 is silty sand (SM) and the composite sample of boring PC-02 is poor SP-SM. Since there were few fines in the samples analyzed, both the expansion index and plasticity index were not applicable, and therefore, were not performed. Sediment analyzed from the Smuggler's Gulch stockpile in early 2009 were of similar grain-size distribution and consisted of poor SP-SM (URS, 2009).

Table 3-4. Sediment Sample Analytical Results – Metals
(metals reported in mg/kg, unless noted otherwise)

Analyte	Detection Limit	Reporting Limit	PC-01-05.0	PC-01-10.0	PC-02-01.0	PC-02-05.0	Human Health		Hazardous Waste Criterion			Ecological Risk	
							CHHSL/RSL		TTLC	STLC (mg/l)	TCLP (mg/l)	Marine Sediment	
			11/16/2009 11:00:00 AM	11/16/2009 11:15:00 AM	11/16/2009 10:00:00 AM	11/16/2009 10:15:00 AM	Residential	Commercial/ Industrial				ERL	ERM
Antimony	1.09	10.0	ND	ND	ND	ND	30	3,800	500	15	---	---	---
Arsenic	0.43	1.00	1.51	ND	1.94	1.74	0.07	0.24	500	5.0	5.0	8.2	41.6
Barium	0.36	1.00	70.7	35.5	86.2	57.0	5,200	63,000	10,000	100	100	---	---
Beryllium	0.02	1.00	ND	ND	ND	ND	150	1,700	75	0.75	---	---	---
Cadmium	0.08	1.00	ND	ND	ND	ND	1.7	7.5	100	1.0	1.0	1.2	9.6
Chromium	0.40	1.00	10.1	4.88	11.3	6.60	100,000	100,000	2,500	5	5	81	370
Cobalt	0.10	1.00	4.41	1.99	5.31	3.42	660	3,200	8,000	80	---	---	---
Copper	0.09	1.00	4.92	3.62	7.38	13.9	3,000	38,000	2,500	25	---	34	270
Lead	0.79	1.00	6.06	3.68	7.71	7.30	150	3,500	1,000	5.0	5.0	46.7	218
Mercury	0.02	0.05	ND	ND	0.10	ND	18	180	20	0.2	0.2	150	710
Molybdenum	1.10	5.00	ND	ND	ND	ND	380	4,800	3,500	350	---	---	---
Nickel	0.31	1.00	3.53	2.09	4.38	7.91	1,600	16,000	2,000	20	---	20.9	51.6
Selenium	0.52	1.00	ND	ND	ND	ND	380	4,800	100	1.0	1.0	---	---
Silver	0.10	0.50	ND	ND	ND	ND	380	4,800	500	5	5	1.0	3.7

Analyte	Detection Limit	Reporting Limit	PC-01-05.0	PC-01-10.0	PC-02-01.0	PC-02-05.0	Human Health		Hazardous Waste Criterion			Ecological Risk	
							CHHSL/RSL		TTLC	STLC (mg/l)	TCLP (mg/l)	Marine Sediment	
			11/16/2009 11:00:00 AM	11/16/2009 11:15:00 AM	11/16/2009 10:00:00 AM	11/16/2009 10:15:00 AM	Residential	Commercial/ Industrial				ERL	ERM
Thallium	0.46	1.00	ND	ND	ND	ND	5	63	700	7.0	---	---	---
Vanadium	0.20	1.00	32.6	13.9	37.9	22.9	530	6,700	2,400	24	---	---	---
Zinc	0.56	1.00	38.2	19.0	50.0	48.4	23,000	100,000	5,000	250	---	150	410

Notes:

Metals by EPA Method 6010, with the exception of mercury (EPA Method 7471)

CHHSL: California Human Health Screening Level

RSL: U.S. EPA Region IX Regional Screening Level

TTLC: Total Threshold Limit Concentration

STLC: Soluble Threshold Limit Concentration. Multiply STLC regulatory limit by 10 to compare to results. See text for discussion.

TCLP: Total Threshold Limit Concentration. Multiply TCLP regulatory limit by 20 to compare to results. See text for discussion.

ERL: Effects Range-Low

ERM: Effects Range-Medium

ND: Not Detected

---: None Established

Table 3-5. Sediment Sample Analytical Results – Organics

(consistuents reported in mg/kg, unless noted otherwise)

Analyte	Method Detection Limit	Reporting Limit	PC-01-05.0	PC-01-10.0	PC-02-01.0	PC-02-05.0	Human Health		Hazardous Waste Criterion			Ecological Risk	
							CHHSL/RSL					Marine Sediment	
			11/16/2009 11:00:00 AM	11/16/2009 11:15:00 AM	11/16/2009 10:00:00 AM	11/16/2009 10:00:15 AM	Residential	Commercial/ Industrial	TTLC	STLC (mg/l)	TCLP (mg/l)	ERL	ERM
TPH-extended range (mg/kg)	various	various	ND	ND	ND	ND	---	---	---	---	---	---	---
SVOCs (ug/kg):													
bis(2-ethylhexyl) phthalate	5.72	45.0	135	36.1	264	114	35,000	120,000	---	---	---	---	---
butyl benzyl phthalate	4.11	40.0	13.4	ND	53.7	145	260,000	910,000	---	---	---	---	---
bi-n-butyl phthalate	3.87	40.0	4.96	ND	9.73	26.7	6,100,000	62,000,000	---	---	---	---	---
biethyl phthalate	1.61	20.0	2.77	ND	ND	1.85	49,000,000	490,000,000	---	---	---	---	---
PAHs (ug/kg):													
benzo(a)anthracene	3.09	20.0	ND	ND	13.6	ND	150	2,100	---	---	---	261	1,600
benzo(b)fluoranthene	3.09	20.0	ND	ND	14.3	ND	150	2,100	---	---	---	---	---
benzo(a)pyrene	3.07	20.0	ND	ND	6.01	ND	38	130	---	---	---	430	1,600
chrysene	2.87	20.0	ND	ND	7.48	ND	15,000	210,000	---	---	---	384	2,800
fluoranthene	3.43	20.0	ND	ND	8.00	3.51	2,300,000	22,000,000	---	---	---	600	5,100
phenanthrene	1.95	20.0	2.68	ND	5.69	3.83	---	---	---	---	---	240	1,500
pyrene	2.88	20.0	4.12	ND	10.7	7.58	1,700,000	17,000,000	---	---	---	665	2,600
OCPs and PCBs (ug/kg)	various	various	ND	ND	ND	ND	various	various	various	various	various	various	various

Notes:

TPH: Total petroleum hydrocarbons-extended range by modified EPA Method 8015

OCPs and PCBs: Organochlorine pesticides and polychlorintated biphenyls by EPA Method 8081A/8082

SVOCs Semivolatile organic compounds by EPA Method 8270C

PAHs: Polynuclear aromatic hydrocarbons by EPA Method 8270C

CHHSL: California Human Health Screening Level

RSL: U.S.EPA Region IX Regional Screening Levels

TTLC: Total Threshold Limit Concentration

STLC: Soluble Threshold Limit Concentration. Multiply STLC regulatory limit by 10 to compare to results. See text for discussion.

TCLP: Total Threshold Limit Concentration. Multiply TCLP regulatory limit by 20 to compare to results. See text for discussion.

ERL: Effects Range-Low

ERM: Effects Range-Medium

ND: Not Detected

SECTION 4 DISCUSSION

URS conducted screening of the soil sample analytical results by comparing the concentrations of the detected COPCs to human health screening and hazardous waste criteria, in order to identify the potential soil reuse and disposal options that may be suitable for the materials excavated from the Pilot Channel. The analytical data were compared to California Human Health Screening Levels (CHHSLs; California Environmental Protection Agency (Cal EPA) 2005) for both residential and non-residential land use scenarios. In instances where there was no established CHHSL for a COPC detected, the data were compared to U.S. EPA Region IX Regional Screening Levels [RSLs; formerly known as Preliminary Remediation Goals (PRGs; United States Environmental Protection Agency [U.S. EPA 2009])]. The data were also compared to state and federal hazardous waste criteria to evaluate possible disposal requirements. For comparative purposes, the various screening levels are listed on the right side of Table 3-4 and Table 3-4. In addition to these criteria, if the sediment were to be used for beach replenishment, the data are also compared to ecological risk screening criteria. A preliminary ecological risk screen is also discussed below.

4.1 Human Health Screening

The CHHSLs were modeled after the PRGs and have been developed for about 60 chemicals in soil or soil gas based on a threshold of one in a million (1×10^{-6}) lifetime cancer risk and a hazard quotient of 1.0 for non-cancer health effects. The CHHSLs were developed using standard exposure assumptions and chemical toxicity values published by the California Environmental Protection Agency (Cal EPA), where available and the U.S. EPA, in instances where no Cal EPA-specific toxicity value exists.

It should be noted that the comparison of analytical data to CHHSLs is a screening tool. It does not indicate that the chemical concentrations exceeding these levels pose an adverse health risk. It does however; suggest that further evaluation of potential human health concerns may be warranted. Used in conjunction with the human health screening evaluation described in the California Environmental Protection Agency/Department of Toxic Substances Control (DTSC) Preliminary Endangerment Assessment (PEA) Guidance Manual (revised 1999), the CHHSLs can assist in identifying whether further site investigation, risk assessment and/or remediation is needed at a particular site. CHHSLs are not regulatory cleanup standards; however, in lieu of developing site-specific cleanup goals in instances where the cleanup action timeframe is short, these values may be used for these purposes provided that the responsible party and oversight agency are in concurrence, the site has been fully characterized, and potential environmental concerns are fully evaluated.

The concentrations of the detected constituents are compared to these screening criteria by analytical suite in the sections below. Based on this evaluation, none of the COPCs were present in the samples at levels that would pose an adverse human health risk.

4.1.1 Metals

The concentrations of each of the 12 metals detected generally fall within narrow ranges and appear to represent background (Bradford et al. 1996). None of the metals, with the exception of arsenic, is present in the sediment at concentrations above their respective residential and commercial/industrial CHHSL or

RSL. Background soil in many areas of the U.S., including California, contains arsenic at concentrations above the CHHSL. The concentrations of arsenic detected in the samples from the borings ranged from 1.51 to 1.94 mg/kg. DTSC conducted a background study of arsenic at school sites in the Los Angeles Unified School District that found that concentrations generally below approximately 6 mg/kg represent background (DTSC 2005). DTSC typically requires further action if arsenic concentrations are generally above 15 to 20 mg/kg.

4.1.2 Semi-volatile Organic Compounds

The SVOC, bis(2-ethylhexyl) phthalate [also known as di(2-ethyl hexyl)phthalate (DEHP)] does not have an established CHHSL for residential and/or commercial/industrial use; however, there are U.S. EPA Region IX Regional Screening Levels (RSLs) that have been established for this and the other phthalates detected in the soil samples analyzed. The residential and industrial RSLs are 35,000 and 120,000 micrograms per kilogram (ug/kg), respectively. The concentrations of this compound that were detected in the samples were well below these screening criteria. This compound is used to make plastic flexible. It is present in many everyday plastic products (ATSDR, 2002). Similarly, the other phthalates also have RSLs that are higher than those established for DEHP. The detected concentrations are very low relative to their respective screening critieria for residential and industrial use. These compounds have uses similar to DEHP.

4.1.3 Polynuclear Aromatic Hydrocarbons

OF the PAHs, only benzo(a)pyrene has CHHSLs established for residential and commercial/industrial property use. The other PAHs detected have established RSLs. The RSLs for the other PAHs detected are considerably higher than the CHHSLs established for benzo(a)pyrene. None of the concentrations of the PAHs detected were above their respective CHHSLs or RSLs.

4.1.4 Organochlorine Pesticides and Polychlorinated Biphenyls

No OCPs or PCBs were present at detectable concentrations in the sediment samples analyzed from the soil borings. Therefore these compounds are not present at concentrations that are above their respective CHHSLs or RSLs.

4.2 Ecological Risk Screening

The National Oceanic and Atmospheric Administration (NOAA) has prepared a series of reference tables, referred to as Screening Quick Reference Tables (SQuiRTs) that can be used to screen inorganic and organic constituents in a variety of environmental media under various environmental circumstances. The table is used to screen for COPCs that could threaten natural resources of concern to NOAA. NOAA also develops Sediment Quality Guidelines (SQGs) as informal, interpretive tools for ecological risk screening. The values appearing in the SQuiRTs should not be construed as cleanup levels, but are suitable for preliminary screening to identify whether further action is necessary. Because beach replenishment occurs in the marine environment, the data from the borings have been compared to marine sediment guidelines: Effects Range-Low (ERL) and Effects Range-Medium (ERM) screening levels. The ERL is the concentration below which adverse effects rarely occur in organisms for a particular

substance. The ERM, which is a higher concentration than the ERL is that concentration above which effects frequently occur. The ERLs and ERMs have been calculated for nine metals, thirteen PAHs and some OCPs. There is no established ERL and ERM for some of the COPCs, specifically, TPH and some of the other organic analytes.

4.2.1 Metals

A comparison of ERL and ERM values for the detected metals in the sediment indicates that none of the concentrations present are above its respective ERL.

4.2.2 Semi-volatile Organic Compounds

There are no ERLs and ERMs established for the phthalates detected in the sediment samples analyzed.

4.2.3 Polynuclear Aromatic Compounds

PAHs were not detected in the sediment samples collected from the borings; therefore none of the compounds is present at a concentration above its respective ERL.

4.2.4 Organochlorine Pesticides and Polychlorinated Biphenyls

OCPs and PCBs were not detected in the sediment samples collected from the borings; therefore none of the compounds is present at a concentration above its respective ERL.

4.3 Hazardous Waste Screening

State (California Code of Regulations [CCR] Title 22 Section 66261.3) and Federal hazardous waste regulations (40CFR 261.3) include regulatory limits for certain constituents based on toxicity. In California, the regulatory limits for the toxicity characteristic are identified by comparing the concentrations of a constituent to the Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC). If a constituent concentration is above either of these regulatory limits, the material may be considered a non-Resource Conservation and Recovery Act (RCRA), California hazardous waste. As such, the materials may require disposal at a Class I landfill if these materials were to be removed from the site. To identify whether a material is a Federal or RCRA hazardous waste, the materials are subjected to a leaching procedure and the concentration of that constituent in the extract is compared to the Toxicity Characteristic Leaching Procedure (TCLP) regulatory limit. None of the COPCs analyzed were present in the sediment above its respective TTLC regulatory limit.

Both the Waste Extraction Test (WET) that is used to obtain the STLC of a sample and the TCLP have an inherent dilution factor. TTLCs for a constituent can be screened to identify whether a sample has the potential to exceed its STLC or TCLP regulatory limit. The WET has a dilution factor of 10 times and the TCLP has a dilution factor of 20 times. For example, a sample with a lead concentration of greater than 50 milligrams per kilogram (mg/kg) has the potential to have an STLC concentration greater than the STLC regulatory limit of 5 milligrams per liter (mg/l), assuming that all the lead present in the sample is extracted through the WET and is present in the extract that is analyzed for lead. Similarly, a lead

concentration of 100 mg/kg has the potential to exceed the TCLP regulatory limit of 5 mg/l if all of the lead extracted by this procedure were to be present in the extract.

Based on such an evaluation of the data for the soil samples analyzed from borings, none of the detected COPCs with regulatory limits based on toxicity were present at concentrations above its TTLC, 10 times its respective STLC and 20 times its respective TCLP regulatory limit. The analytical data indicate that the sediment sampled in the borings is non-hazardous.

SECTION 5 CONCLUSIONS

Based on the results of sampling and analyses, the following conclusions may be drawn:

Human Health Risk: Analytical results indicate that none of the metals or organic compounds was present in the sediment at concentrations that were above a respective CHHSL or RSL established for a residential use scenario. Residential use is the most conservative exposure scenario and as such, unrestricted use of the sediment could be possible considering that it does not appear to pose a potential adverse human health risk.

Ecological Risk: Based on the detected concentrations of the metals and comparison to the ERL and ERM screening levels, none were present at concentrations above their respective ERL. None of the samples analyzed contained detectable concentrations of the organic compounds analyzed. Therefore, preliminary results from this investigation indicate that the sediment may be suitable for reuse in the marine environment.

Hazardous Waste Criteria: The sediment is non-hazardous based on comparison to California and federal hazardous waste criteria appearing in CCR Title 22, Chapter 11, Article 3 and 40 CFR 261.3, respectively. Because these materials are non-hazardous, it would appear that the sediment is suitable for unrestricted reuse, provided that it was free of trash and other unsuitable debris.

Grain-size Analyses: The composite materials from boring PC-01 consist of SM, and sediment from the composite of boring PC-02 consists of poorly graded SP-SM. Based on the grain-size distribution, these materials could be suitable for beach replenishment, considering the characteristics of a receiving location. It is possible that the sand may have other possible beneficial uses since it does not contain considerable fines.

The results presented herein serve as a preliminary assessment of the characteristics associated with sediment excavated from the Pilot Channel based on a limited number of analyses. It is possible that there may be some variation in the grain size distribution of the sediment from year to year depending on the intensity of storm events. Although few COPCs were detected in the sediment samples, it is possible that the types and concentrations of COPCs that may be present in sediment in the valley may be highly variable. Therefore, as a standard practice, some level of analyses of stockpiled materials in accordance with applicable regulatory guidelines will be necessary to confirm that the sediment is suitable for its intended reuse.

SECTION 6 REFERENCES

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Appendix A Boring Logs and Grain-size Distribution Curves

Project: Pilot Channel Borings and Sediment Analysis
Project Location: Pilot Channel
Project Number: 27679009.04000

Key to Logs

Elevation, feet	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
1	2	3	4	5	6	7	8	9	10

COLUMN DESCRIPTIONS

1 **Elevation:** Elevation in feet referenced to mean sea level (MSL) or site datum.

2 **Depth:** Depth in feet below the ground surface.

3 **Sample Type:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

4 **Sample Number:** Sample identification number. Unnumbered sample indicates no sample recovery.

5 **Blows per foot:** Number of blows required to advance driven sampler 12 inches beyond first 6-inch interval, or distance noted, using a 140-lb hammer with a 30-inch drop.

6 **Graphic Log:** Graphic depiction of subsurface material encountered; typical symbols are explained below.

7 **Material Description:** Description of material encountered; may include relative density/consistency, moisture, color, particle size; texture, weathering, and strength of formation material.

8 **Water Content:** Water content of soil sample measured in laboratory, expressed as percentage of dry weight of specimen.

9 **Dry Unit Weight:** Dry density of soil sample measured in laboratory, expressed in pounds per cubic feer (pcf).

10 **Remarks and Other Tests:** Comments and observations regarding drilling or sampling made by driller or field personnel.

WA	Three-point wash sieve, %<#200 sieve
SA	Sieve analysis, %<#200 sieve
LL	Liquid limit (from Atterberg limits test), %
PI	Plasticity Index (LL-PL), %; NP=nonplastic
DS	Direct Shear test

TYPICAL MATERIAL GRAPHIC SYMBOLS

SAND (SP)

Silty SAND (SM)

Poorly graded SAND with silt (SP-SM)

Well graded SAND with silt (SW-SM)

TYPICAL SAMPLER GRAPHIC SYMBOLS

California Split Spoon sampler (2.5")

OTHER GRAPHIC SYMBOLS

First water encountered at time of drilling and sampling (ATD)

Water level measured at specified time after completion of drilling and sampling

Minor change in material properties within a stratum

Inferred or gradational contact between strata

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2. Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.
3. All wells were completed with a traffic-rated well vault set in concrete. Well casings were secured with locking plugs and locks.

URS

Project: Pilot Channel Borings and Sediment Analysis
Project Location: Pilot Channel
Project Number: 27679009.04000

Log of Boring PC-01

Sheet 1 of 1

Date(s) Drilled	11/16/09	Logged By	S. Haber	Checked By	R. Scott
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8 inches	Total Depth of Borehole	11.5 feet
Drill Rig Type	Limited Access Rig	Drilling Contractor	Baja Exploration	Approximate Surface Elevation	
Water Level Depth (Feet)	None encountered	Sampling Method(s)	California Split Spoon	Hammer Data	140 lbs/30" drop
Borehole Backfill	Soil cuttings	Location	N 32°33.161', W 117°05.626'		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		01-01.0	17		ALLUVIUM Medium dense, dry, yellowish brown, silty SAND (SM)			
	5		01-05.0	24		Medium dense, dry, olive, poorly graded SAND (SP) Medium dense, dry, olive, poorly graded SAND with silt (SP-SM)			
	10		01-10.0	45		Dense, moist, olive, well graded, coarse SAND with silt (SW-SM)			
						Bottom of boring at 11.5 feet			
	15								
	20								
	25								
	30								

URS

Report: GEO_10_SNA_WIDE SAMPLE; File: 27679009.GPJ; 2/23/2010 PC-01

Project: Pilot Channel Borings and Sediment Analysis
Project Location: Pilot Channel
Project Number: 27679009.04000

Log of Boring PC-02

Sheet 1 of 1

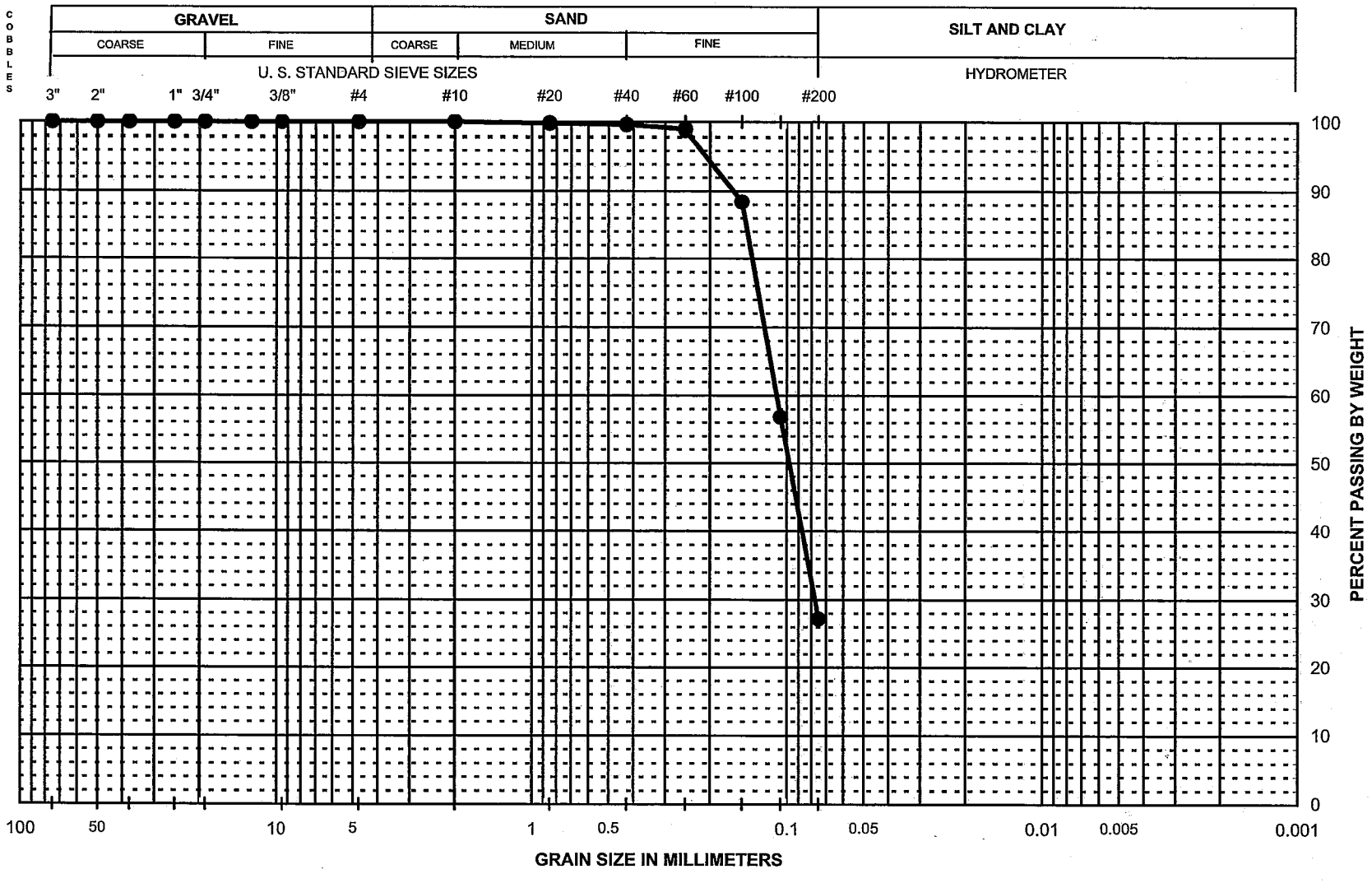
Date(s) Drilled	11/16/09	Logged By	S. Haber	Checked By	R. Scott
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	8 inches	Total Depth of Borehole	11.5 feet
Drill Rig Type	Limited Access Rig	Drilling Contractor	Baja Exploration	Approximate Surface Elevation	
Water Level Depth (Feet)	None encountered	Sampling Method(s)	California Split Spoon	Hammer Data	140 lbs/30" drop
Borehole Backfill	Soil cuttings	Location	N 32°33.172', W 117°05.775'		

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	SAMPLES Blows per foot	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Dry Density, pcf	REMARKS AND OTHER TESTS
	0		02-01.0	16		ALLUVIUM Medium dense, dry, light yellowish brown, silty SAND (SM)			
	5		02-05.0	30		Medium dense, dry, olive, fine SAND with silt (SM) Medium dense, dry, olive, poorly graded SAND (SP) Medium dense, dry, light brown, SAND with silt (SP-SM)			
	10		02-10.0	46		Dense, moist, olive, poorly graded SAND (SM), some silt Coarse sand Bottom of boring at 11.5 feet			
	15								
	20								
	25								
	30								

URS

Report: GEO_10_SNA_WIDE SAMPLE; File: 27679009.GPJ; 2/23/2010 PC-02

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	100.0
#20	0.850	99.8
#40	0.425	99.6
#60	0.250	99.0
#100	0.150	88.4
#140	0.106	56.8
#200	0.075	27.2
Hydrometer Analysis		

% Cobbles	
% Gravel	0.0
% Sand	72.8
% Fines	27.2
D_{60}	
D_{30}	
D_{10}	
C_u	
C_c	

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 µm	Description and Classification
PC-01	1	0.0	●					**Yellowish brown silty Sand (SM)**

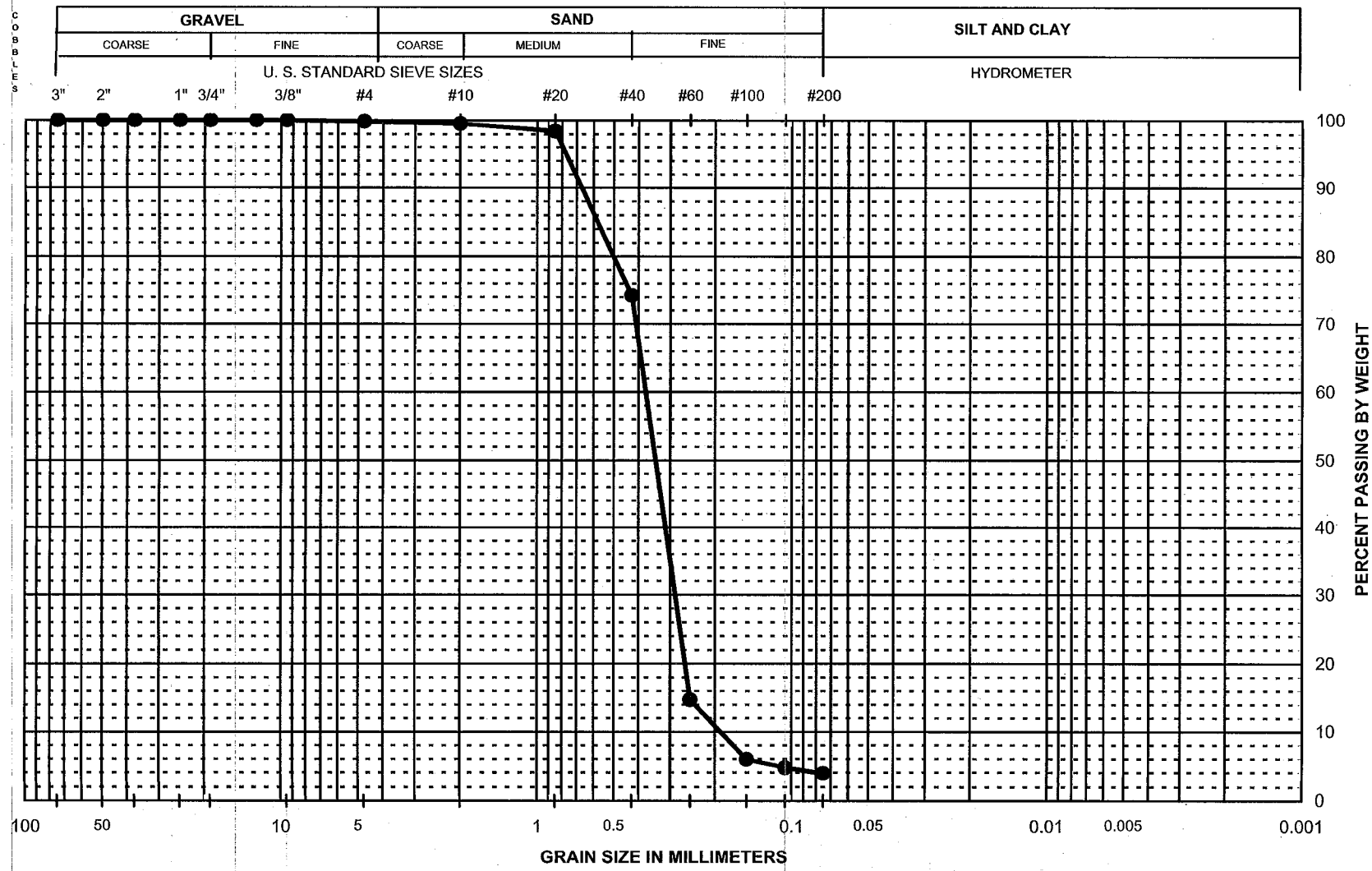
PROJECT NAME: City of San Diego TO#10 - Pilot Channel

PROJECT NUMBER: 27679010

PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	99.5
#20	0.850	98.4
#40	0.425	74.2
#60	0.250	14.7
#100	0.150	5.9
#140	0.106	4.7
#200	0.075	3.8

Hydrometer Analysis

% Cobbles	
% Gravel	0.2
% Sand	96.0
% Fines	3.8

D_{60}	0.374
D_{30}	0.287
D_{10}	0.190
C_u	2.0
C_c	1.2

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 μm	Description and Classification
PC-01	2	5.0	●					Olive poorly graded Sand (SP)

PROJECT NAME: City of San Diego TO#10 - Pilot Channel

PROJECT NUMBER: 27679010

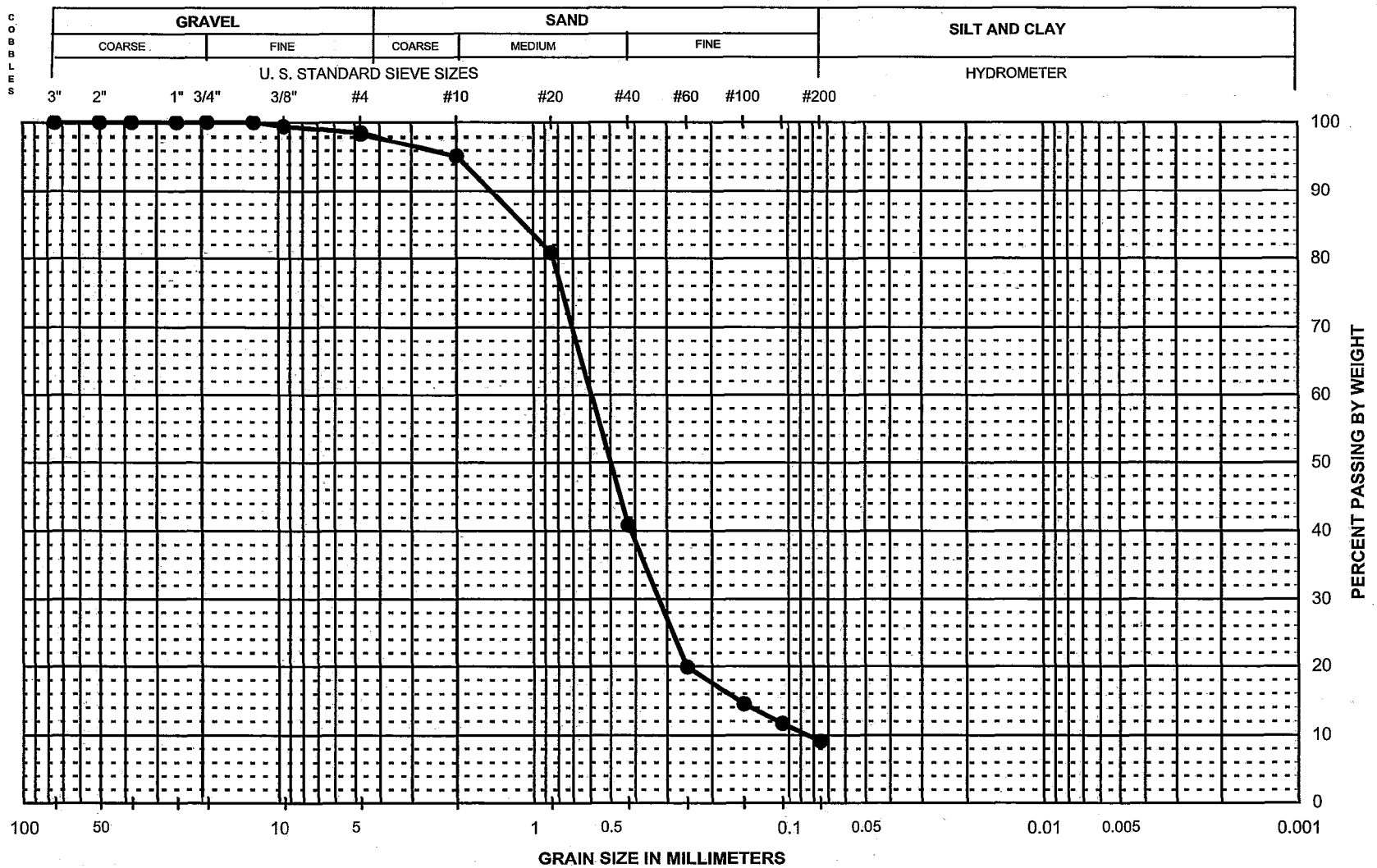
PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC01005

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	99.4
#4	4.75	98.5
#10	2.00	95.2
#20	0.850	80.8
#40	0.425	40.8
#60	0.250	19.9
#100	0.150	14.5
#140	0.106	11.7
#200	0.075	9.1

Hydrometer Analysis

% Cobbles	
% Gravel	1.5
% Sand	89.4
% Fines	9.1
D_{60}	0.593
D_{30}	0.323
D_{10}	0.085
C_u	7.0
C_c	2.1

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 µm	Description and Classification
PC-01	3	10.0	●					**Olive well-graded Sand with silt (SW-SM)**

PROJECT NAME: City of San Diego TO#10 - Pilot Channel

PROJECT NUMBER: 27679010

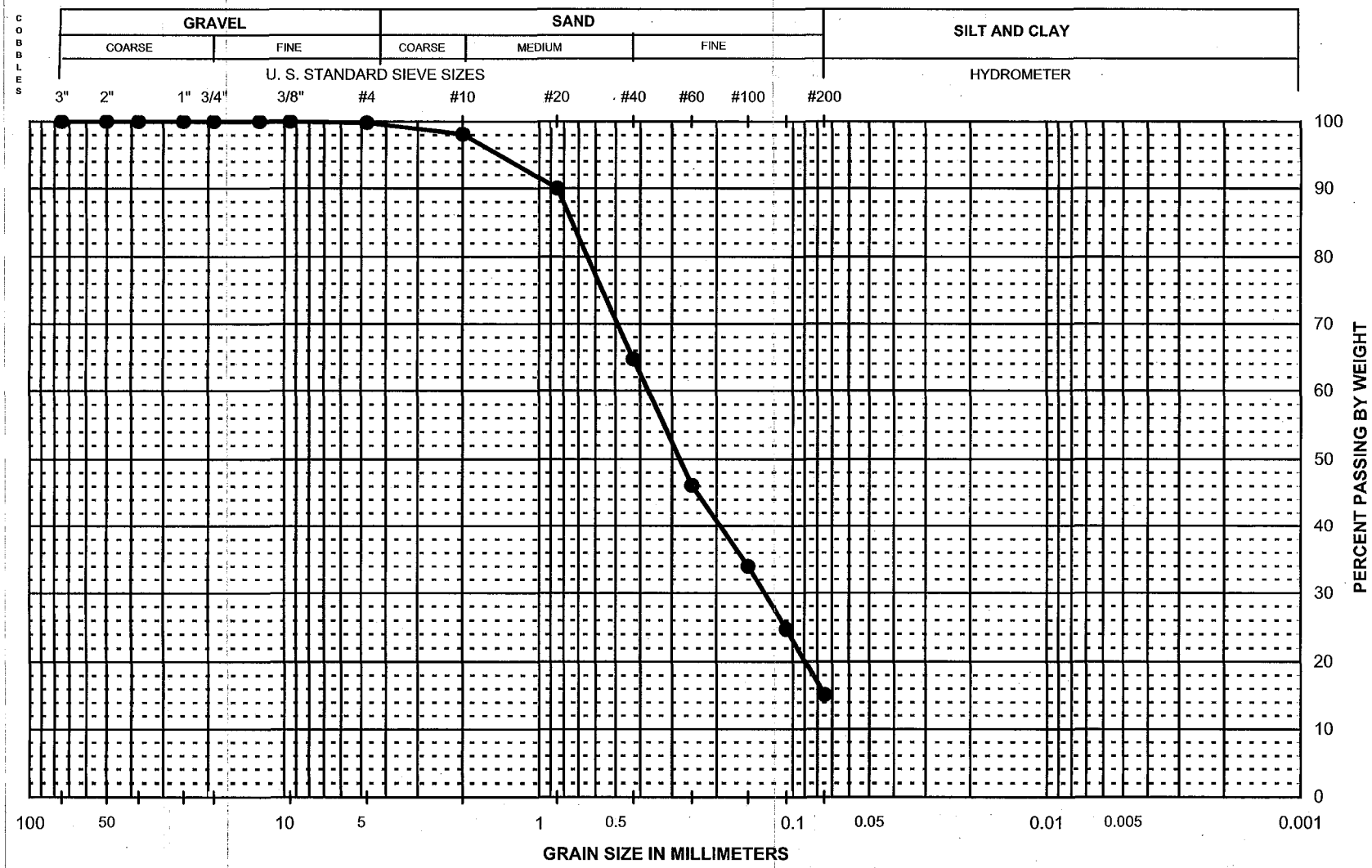
PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC01010

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.8
#10	2.00	98.1
#20	0.850	90.0
#40	0.425	64.7
#60	0.250	46.1
#100	0.150	34.0
#140	0.106	24.7
#200	0.075	15.1

Hydrometer Analysis

% Cobbles	
% Gravel	0.2
% Sand	84.7
% Fines	15.1
D_{60}	
D_{30}	
D_{10}	
C_u	
C_c	

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 μm	Description and Classification
PC-01	composite	0 ~ 10	●					**Light olive brown silty Sand (SM)**

PROJECT NAME: **City of San Diego TO#10 - Pilot Channel**

PROJECT NUMBER: **27679010**

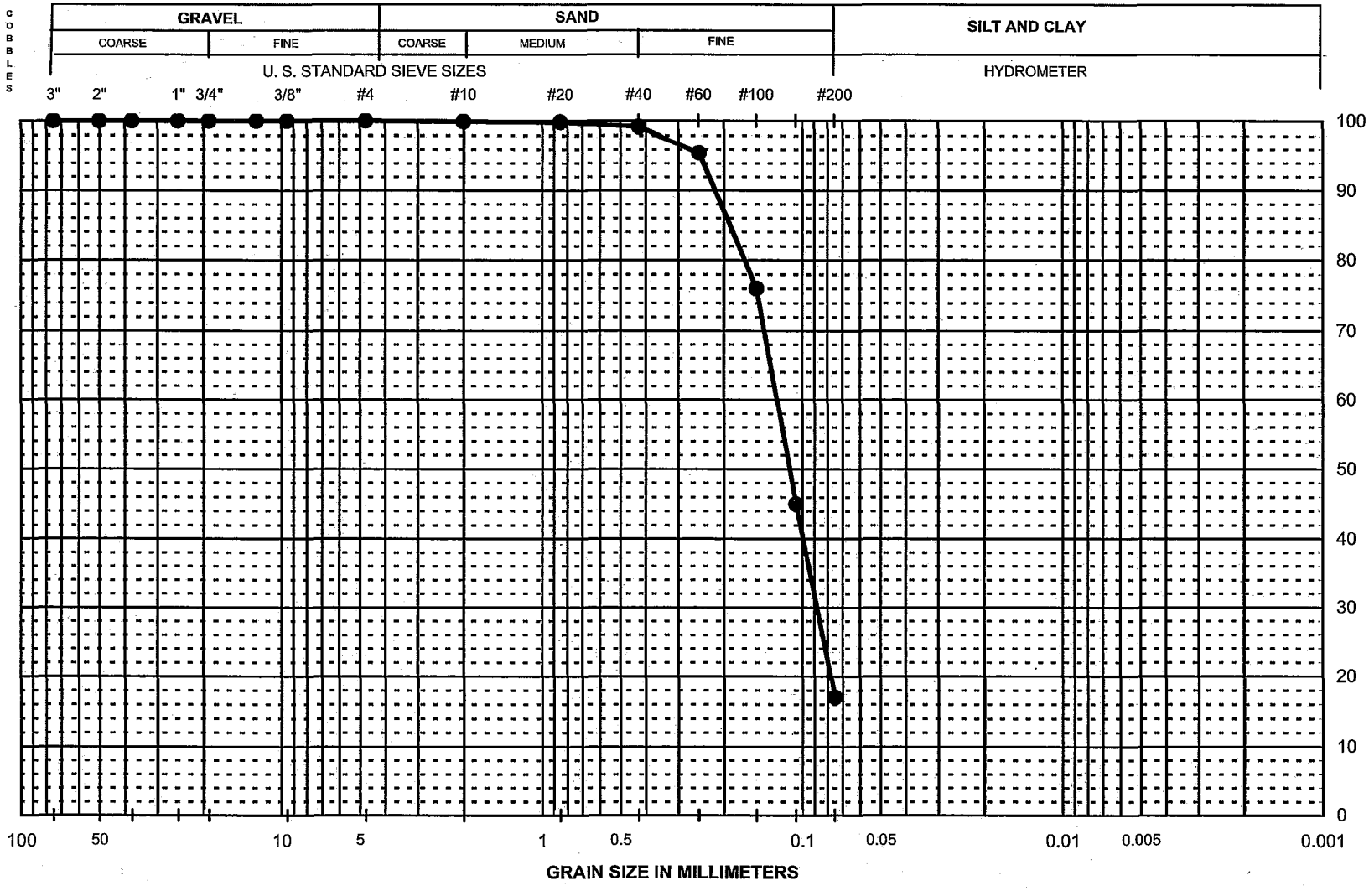
PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC01bulk

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.8
#40	0.425	99.2
#60	0.250	95.5
#100	0.150	76.0
#140	0.106	45.0
#200	0.075	17.0
Hydrometer Analysis		

% Cobbles	
% Gravel	0.0
% Sand	83.0
% Fines	17.0
D_{60}	
D_{30}	
D_{10}	
C_u	
C_c	

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 µm	Description and Classification
PC-02	1	0.0	●					**Light yellowish brown silty Sand (SM)**

PROJECT NAME: **City of San Diego TO#10 - Pilot Channel**

PROJECT NUMBER: **27679010**

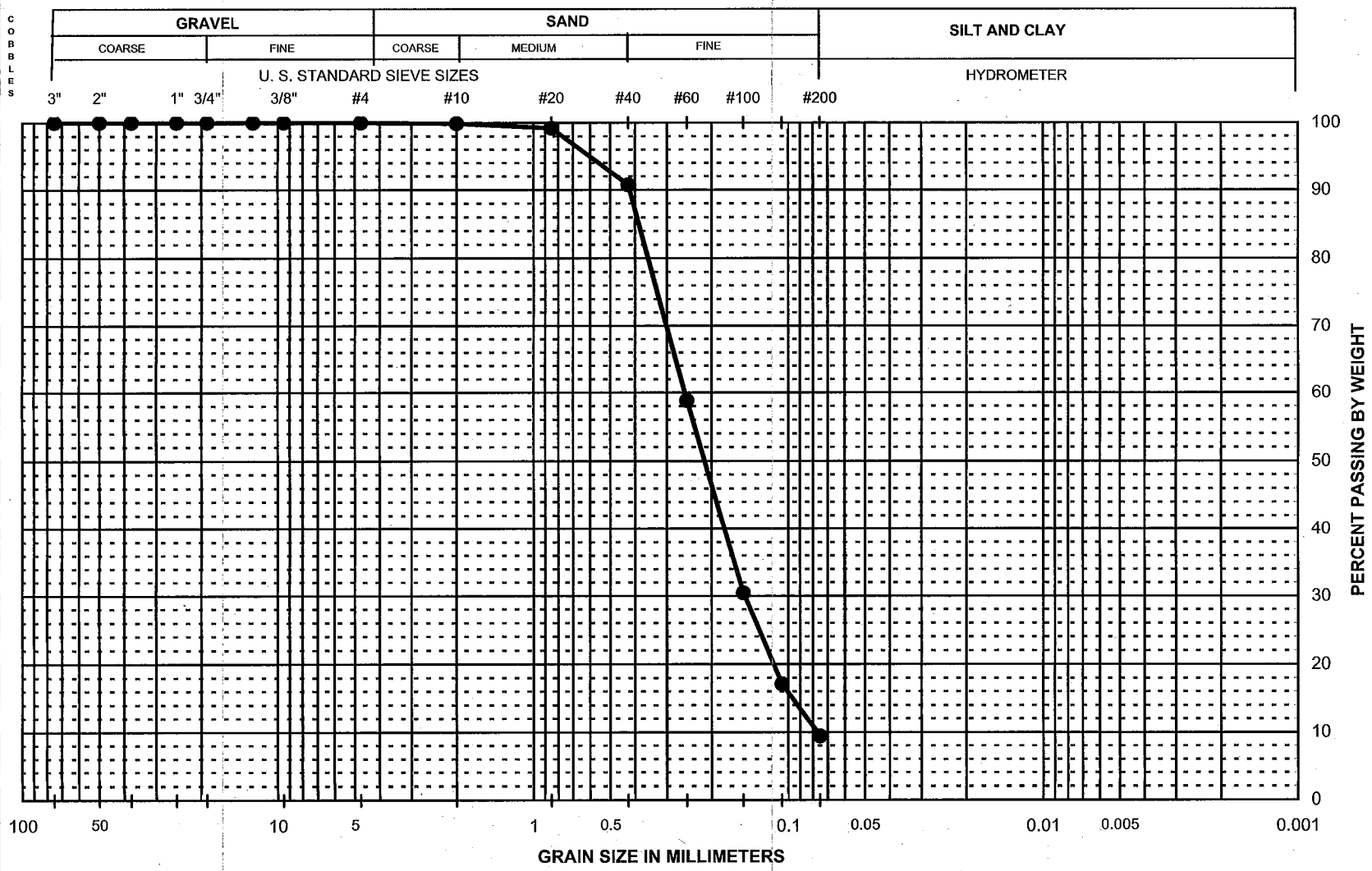
PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC02000

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	100.0
#10	2.00	99.9
#20	0.850	99.2
#40	0.425	90.7
#60	0.250	58.8
#100	0.150	30.4
#140	0.106	17.1
#200	0.075	9.4

Hydrometer Analysis

% Cobbles	
% Gravel	0.0
% Sand	90.6
% Fines	9.4
D_{60}	0.255
D_{30}	0.148
D_{10}	0.077
C_u	3.3
C_c	1.1

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 μm	Description and Classification
PC-02	2	5.0	●					Light olive brown poorly graded Sand with silt (SP-SM)

PROJECT NAME: City of San Diego TO#10 - Pilot Channel
PROJECT NUMBER: 27679010

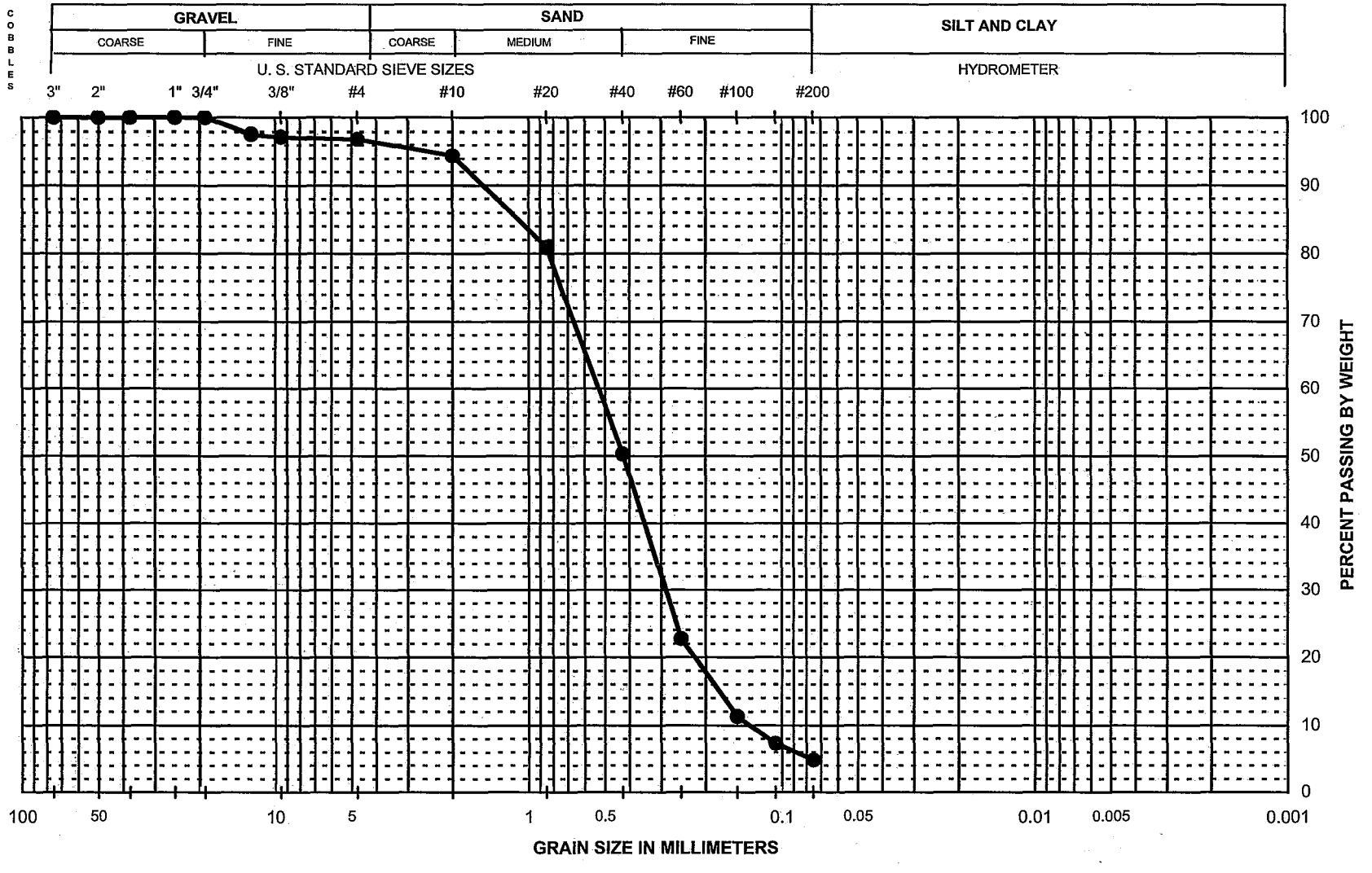
PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC02005

URS

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	97.6
3/8"	9.50	97.2
#4	4.75	96.9
#10	2.00	94.4
#20	0.850	80.9
#40	0.425	50.3
#60	0.250	22.7
#100	0.150	11.3
#140	0.106	7.3
#200	0.075	4.8
Hydrometer Analysis		

% Cobbles	
% Gravel	3.1
% Sand	92.1
% Fines	4.8
D_{60}	0.529
D_{30}	0.288
D_{10}	0.134
C_u	4.0
C_c	1.2

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 µm	Description and Classification
PC-02	3	10.0	●					**Olive poorly graded Sand (SP)**

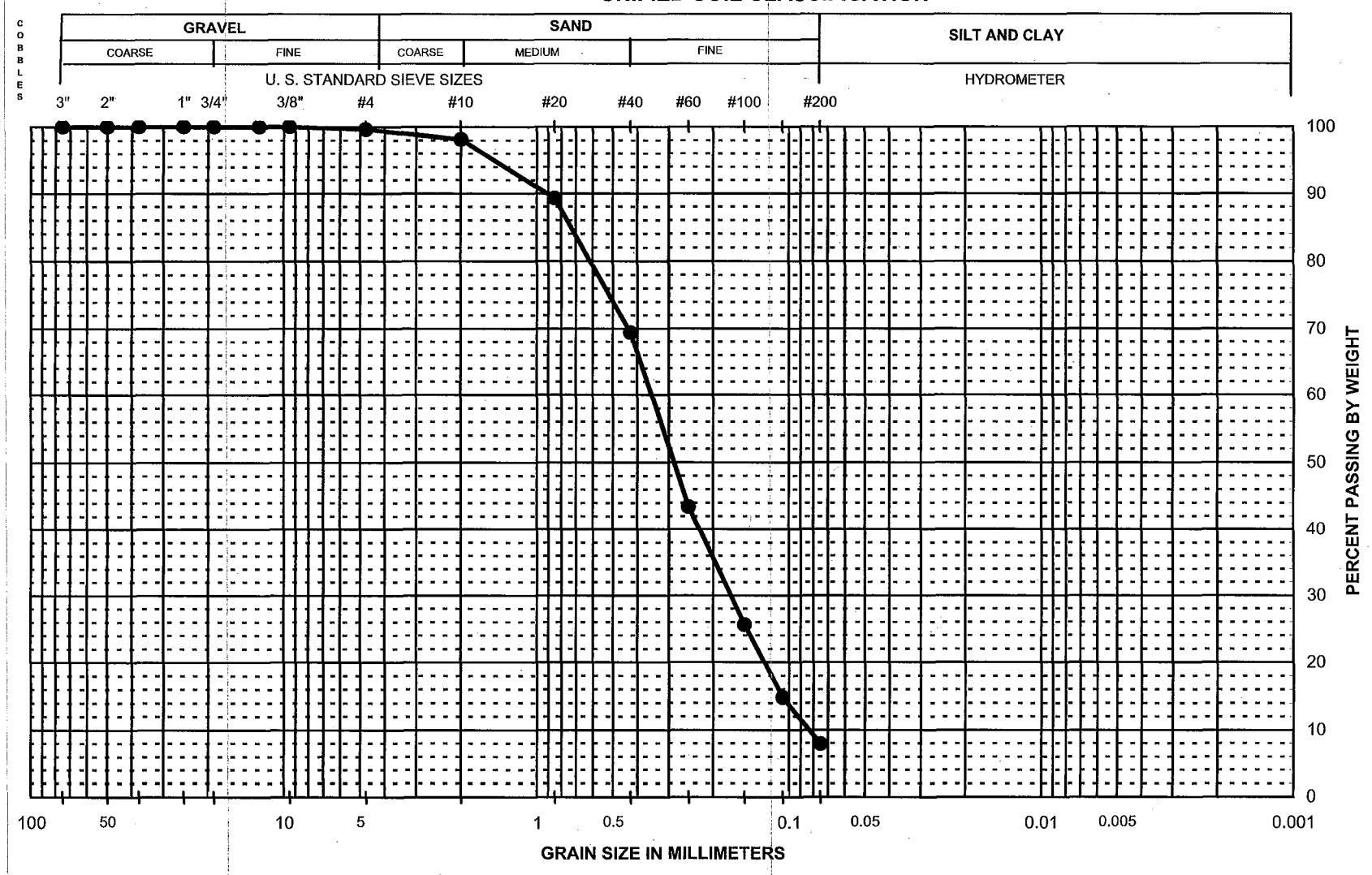
PROJECT NAME: City of San Diego TO#10 - Pilot Channel

PROJECT NUMBER: 27679010

PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

UNIFIED SOIL CLASSIFICATION



Sieve No.	Dia. mm	% Finer
3"	75.0	100.0
2"	50.0	100.0
1.5"	37.5	100.0
1"	25.0	100.0
3/4"	19.00	100.0
1/2"	12.50	100.0
3/8"	9.50	100.0
#4	4.75	99.6
#10	2.00	98.1
#20	0.850	89.3
#40	0.425	69.4
#60	0.250	43.4
#100	0.150	25.6
#140	0.106	14.8
#200	0.075	7.9
Hydrometer Analysis		

% Cobbles	
% Gravel	0.4
% Sand	91.7
% Fines	7.9
D_{60}	0.351
D_{30}	0.170
D_{10}	0.083
C_u	4.2
C_c	1.0

Exploration	Sample No.	Depth (ft)	SYMBOL	Wn (%)	LL	PI	% 5 μm	Description and Classification
PC-02	composite	0 ~ 10	●					**Olive poorly graded Sand with silt (SP-SM)**

PROJECT NAME: City of San Diego TO#10 - Pilot Channel
PROJECT NUMBER: 27679010

PARTICLE-SIZE DISTRIBUTION CURVES

Figure:

Sieve SDPC PC02bulk

URS

Appendix B Laboratory Analytical Report and Chain-of-Custody Form

EnviroMatrix Analytical, Inc.

19 February 2010

URS Corporation
Attn: Robert Scott
1615 Murray Canyon Rd Suite 1000
San Diego, California 92108

EMA Log #: 0911387

Project Name: 27679010

Enclosed are the results of analyses for samples received by the laboratory on 11/16/09 15:37. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Dan Verdon
Laboratory Director

CA ELAP Certification #: 2564

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PC-02-01.0	0911387-01	Soil	11/16/09 10:00	11/16/09 15:37
PC-02-05.0	0911387-02	Soil	11/16/09 10:15	11/16/09 15:37
PC-01-05.0	0911387-03	Soil	11/16/09 11:00	11/16/09 15:37
PC-01-10.0	0911387-04	Soil	11/16/09 11:15	11/16/09 15:37

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil	**Sampled: 11/16/09 10:00**		**Received: 11/16/09 15:37**							
Antimony	**1.09**	1.00	10.0	mg/kg	1	9111823	11/18/09	11/18/09	EPA 6010	J
Arsenic	**1.94**	0.43	1.00	"	"	"	"	"	"	
Barium	**86.2**	0.36	1.00	"	"	"	"	"	"	
Beryllium	ND	0.02	1.00	"	"	"	"	11/18/09	"	
Cadmium	**0.25**	0.08	1.00	"	"	"	"	11/18/09	"	J
Chromium	**11.3**	0.40	1.00	"	"	"	"	"	"	
Cobalt	**5.31**	0.10	1.00	"	"	"	"	"	"	
Copper	**7.38**	0.09	1.00	"	"	"	"	"	"	
Lead	**7.71**	0.79	1.00	"	"	"	"	"	"	
Molybdenum	ND	1.10	5.00	"	"	"	"	"	"	
Nickel	**4.38**	0.31	1.00	"	"	"	"	"	"	
Selenium	ND	0.52	1.00	"	"	"	"	"	"	
Silver	ND	0.10	0.50	"	"	"	"	"	"	
Thallium	ND	0.46	1.00	"	"	"	"	"	"	
Vanadium	**37.9**	0.20	1.00	"	"	"	"	"	"	
Zinc	**50.0**	0.56	1.00	"	"	"	"	"	"	
Mercury	**0.10**	0.02	0.05	"	"	9111926	11/19/09	11/19/09	EPA 7471	
PC-02-05.0 (0911387-02) Soil	**Sampled: 11/16/09 10:15**		**Received: 11/16/09 15:37**							
Antimony	ND	1.00	10.0	mg/kg	1	9111823	11/18/09	11/18/09	EPA 6010	
Arsenic	**1.74**	0.43	1.00	"	"	"	"	"	"	
Barium	**57.0**	0.36	1.00	"	"	"	"	"	"	
Beryllium	ND	0.02	1.00	"	"	"	"	11/18/09	"	
Cadmium	**0.31**	0.08	1.00	"	"	"	"	11/18/09	"	J
Chromium	**6.60**	0.40	1.00	"	"	"	"	"	"	
Cobalt	**3.42**	0.10	1.00	"	"	"	"	"	"	
Copper	**13.9**	0.09	1.00	"	"	"	"	"	"	
Lead	**7.30**	0.79	1.00	"	"	"	"	"	"	
Molybdenum	ND	1.10	5.00	"	"	"	"	"	"	
Nickel	**7.91**	0.31	1.00	"	"	"	"	"	"	
Selenium	ND	0.52	1.00	"	"	"	"	"	"	
Silver	ND	0.10	0.50	"	"	"	"	"	"	
Thallium	ND	0.46	1.00	"	"	"	"	"	"	
Vanadium	**22.9**	0.20	1.00	"	"	"	"	"	"	
Zinc	**48.4**	0.56	1.00	"	"	"	"	"	"	
Mercury	**0.04**	0.02	0.05	"	"	9111926	11/19/09	11/19/09	EPA 7471	J

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-05.0 (0911387-03) Soil Sampled: 11/16/09 11:00 Received: 11/16/09 15:37										
Antimony	ND	1.00	10.0	mg/kg	1	9111823	11/18/09	11/18/09	EPA 6010	
Arsenic	**1.51**	0.43	1.00	"	"	"	"	"	"	
Barium	**70.7**	0.36	1.00	"	"	"	"	"	"	
Beryllium	ND	0.02	1.00	"	"	"	"	11/18/09	"	
Cadmium	**0.09**	0.08	1.00	"	"	"	"	11/18/09	"	J
Chromium	**10.1**	0.40	1.00	"	"	"	"	"	"	
Cobalt	**4.41**	0.10	1.00	"	"	"	"	"	"	
Copper	**4.92**	0.09	1.00	"	"	"	"	"	"	
Lead	**6.06**	0.79	1.00	"	"	"	"	"	"	
Molybdenum	ND	1.10	5.00	"	"	"	"	"	"	
Nickel	**3.53**	0.31	1.00	"	"	"	"	"	"	
Selenium	ND	0.52	1.00	"	"	"	"	"	"	
Silver	ND	0.10	0.50	"	"	"	"	"	"	
Thallium	ND	0.46	1.00	"	"	"	"	"	"	
Vanadium	**32.6**	0.20	1.00	"	"	"	"	"	"	
Zinc	**38.2**	0.56	1.00	"	"	"	"	"	"	
Mercury	ND	0.02	0.05	"	"	9111926	11/19/09	11/19/09	EPA 7471	
PC-01-10.0 (0911387-04) Soil Sampled: 11/16/09 11:15 Received: 11/16/09 15:37										
Antimony	ND	1.00	10.0	mg/kg	1	9111823	11/18/09	11/18/09	EPA 6010	
Arsenic	**0.63**	0.43	1.00	"	"	"	"	"	"	J
Barium	**35.5**	0.36	1.00	"	"	"	"	11/18/09	"	
Beryllium	ND	0.02	1.00	"	"	"	"	11/18/09	"	
Cadmium	**0.27**	0.08	1.00	"	"	"	"	11/18/09	"	J
Chromium	**4.88**	0.40	1.00	"	"	"	"	"	"	
Cobalt	**1.99**	0.10	1.00	"	"	"	"	"	"	
Copper	**3.62**	0.09	1.00	"	"	"	"	11/18/09	"	
Lead	**3.68**	0.79	1.00	"	"	"	"	11/18/09	"	
Molybdenum	ND	1.10	5.00	"	"	"	"	"	"	
Nickel	**2.09**	0.31	1.00	"	"	"	"	"	"	
Selenium	ND	0.52	1.00	"	"	"	"	"	"	
Silver	ND	0.10	0.50	"	"	"	"	11/18/09	"	
Thallium	ND	0.46	1.00	"	"	"	"	11/18/09	"	
Vanadium	**13.9**	0.20	1.00	"	"	"	"	11/18/09	"	
Zinc	**19.0**	0.56	1.00	"	"	"	"	"	"	
Mercury	**0.02**	0.02	0.05	"	"	9111926	11/19/09	11/19/09	EPA 7471	J

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil Sampled: 11/16/09 10:00 Received: 11/16/09 15:37										
Aldrin	ND	0.51	2.00	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8081	
alpha-BHC	ND	0.27	2.00	"	"	"	"	"	"	
beta-BHC	ND	0.43	2.00	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	0.35	2.00	"	"	"	"	"	"	
delta-BHC	ND	0.41	2.00	"	"	"	"	"	"	
alpha-Chlordane	ND	0.47	5.00	"	"	"	"	"	"	
gamma-Chlordane	ND	0.51	5.00	"	"	"	"	"	"	
Chlordane (Total)	ND	4.70	5.00	"	"	"	"	"	"	
4,4'-DDD	ND	1.96	8.00	"	4	"	"	"	"	
4,4'-DDE	ND	1.88	8.00	"	"	"	"	"	"	
4,4'-DDT	ND	1.28	8.00	"	"	"	"	"	"	
Dieldrin	ND	0.47	2.00	"	1	"	"	"	"	
Endosulfan I	ND	0.42	2.00	"	"	"	"	"	"	
Endosulfan II	ND	0.76	2.00	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.48	2.00	"	"	"	"	"	"	
Endrin	ND	0.49	2.00	"	"	"	"	"	"	
Endrin aldehyde	ND	0.30	2.00	"	"	"	"	"	"	
Endrin ketone	ND	0.80	2.00	"	"	"	"	"	"	
Heptachlor	ND	0.71	2.00	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.70	2.00	"	"	"	"	"	"	
Methoxychlor	ND	0.74	5.00	"	"	"	"	"	"	
Toxaphene	ND	8.80	25.0	"	"	"	"	"	"	
Surrogate: TCMX		*58 %*	*26-146*			"	"	"	"	
PC-02-05.0 (0911387-02) Soil Sampled: 11/16/09 10:15 Received: 11/16/09 15:37										
Aldrin	ND	0.51	2.00	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8081	
alpha-BHC	ND	0.27	2.00	"	"	"	"	"	"	
beta-BHC	ND	0.43	2.00	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	0.35	2.00	"	"	"	"	"	"	
delta-BHC	ND	0.41	2.00	"	"	"	"	"	"	
alpha-Chlordane	ND	0.47	5.00	"	"	"	"	"	"	
gamma-Chlordane	ND	0.51	5.00	"	"	"	"	"	"	
Chlordane (Total)	ND	4.70	5.00	"	"	"	"	"	"	
4,4'-DDD	ND	1.96	8.00	"	4	"	"	"	"	
4,4'-DDE	ND	1.88	8.00	"	"	"	"	"	"	
4,4'-DDT	ND	1.28	8.00	"	"	"	"	"	"	
Dieldrin	ND	0.47	2.00	"	1	"	"	"	"	
Endosulfan I	ND	0.42	2.00	"	"	"	"	"	"	
Endosulfan II	ND	0.76	2.00	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.48	2.00	"	"	"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-05.0 (0911387-02) Soil Sampled: 11/16/09 10:15 Received: 11/16/09 15:37										
Endrin	ND	0.49	2.00	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8081	
Endrin aldehyde	ND	0.30	2.00	"	"	"	"	"	"	
Endrin ketone	ND	0.80	2.00	"	"	"	"	"	"	
Heptachlor	ND	0.71	2.00	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.70	2.00	"	"	"	"	"	"	
Methoxychlor	ND	0.74	5.00	"	"	"	"	"	"	
Toxaphene	ND	8.80	25.0	"	"	"	"	"	"	
Surrogate: TCMX		*56 %*	*26-146*			"	"	"	"	
PC-01-05.0 (0911387-03) Soil Sampled: 11/16/09 11:00 Received: 11/16/09 15:37										
Aldrin	ND	0.51	2.00	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8081	
alpha-BHC	ND	0.27	2.00	"	"	"	"	"	"	
beta-BHC	ND	0.43	2.00	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	0.35	2.00	"	"	"	"	"	"	
delta-BHC	ND	0.41	2.00	"	"	"	"	"	"	
alpha-Chlordane	ND	0.47	5.00	"	"	"	"	"	"	
gamma-Chlordane	ND	0.51	5.00	"	"	"	"	"	"	
Chlordane (Total)	ND	4.70	5.00	"	"	"	"	"	"	
4,4'-DDD	ND	1.96	8.00	"	4	"	"	"	"	
4,4'-DDE	ND	1.88	8.00	"	"	"	"	"	"	
4,4'-DDT	ND	1.28	8.00	"	"	"	"	"	"	
Dieldrin	ND	0.47	2.00	"	1	"	"	"	"	
Endosulfan I	ND	0.42	2.00	"	"	"	"	"	"	
Endosulfan II	ND	0.76	2.00	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.48	2.00	"	"	"	"	"	"	
Endrin	ND	0.49	2.00	"	"	"	"	"	"	
Endrin aldehyde	ND	0.30	2.00	"	"	"	"	"	"	
Endrin ketone	ND	0.80	2.00	"	"	"	"	"	"	
Heptachlor	ND	0.71	2.00	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.70	2.00	"	"	"	"	"	"	
Methoxychlor	ND	0.74	5.00	"	"	"	"	"	"	
Toxaphene	ND	8.80	25.0	"	"	"	"	"	"	
Surrogate: TCMX		*66 %*	*26-146*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-10.0 (0911387-04) Soil Sampled: 11/16/09 11:15 Received: 11/16/09 15:37										
Aldrin	ND	0.51	2.00	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8081	
alpha-BHC	ND	0.27	2.00	"	"	"	"	"	"	
beta-BHC	ND	0.43	2.00	"	"	"	"	"	"	
gamma-BHC (Lindane)	ND	0.35	2.00	"	"	"	"	"	"	
delta-BHC	ND	0.41	2.00	"	"	"	"	"	"	
alpha-Chlordane	ND	0.47	5.00	"	"	"	"	"	"	
gamma-Chlordane	ND	0.51	5.00	"	"	"	"	"	"	
Chlordane (Total)	ND	4.70	5.00	"	"	"	"	"	"	
4,4'-DDD	ND	1.96	8.00	"	4	"	"	"	"	
4,4'-DDE	ND	1.88	8.00	"	"	"	"	"	"	
4,4'-DDT	ND	1.28	8.00	"	"	"	"	"	"	
Dieldrin	ND	0.47	2.00	"	1	"	"	"	"	
Endosulfan I	ND	0.42	2.00	"	"	"	"	"	"	
Endosulfan II	ND	0.76	2.00	"	"	"	"	"	"	
Endosulfan sulfate	ND	0.48	2.00	"	"	"	"	"	"	
Endrin	ND	0.49	2.00	"	"	"	"	"	"	
Endrin aldehyde	ND	0.30	2.00	"	"	"	"	"	"	
Endrin ketone	ND	0.80	2.00	"	"	"	"	"	"	
Heptachlor	ND	0.71	2.00	"	"	"	"	"	"	
Heptachlor epoxide	ND	0.70	2.00	"	"	"	"	"	"	
Methoxychlor	ND	0.74	5.00	"	"	"	"	"	"	
Toxaphene	ND	8.80	25.0	"	"	"	"	"	"	
Surrogate: TCMX		*82 %*	*26-146*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Polychlorinated Biphenyls by EPA Method 8082

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil	**Sampled: 11/16/09 10:00**		**Received: 11/16/09 15:37**							
Aroclor 1016	ND	4.60	20.0	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8082	
Aroclor 1221	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1232	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1242	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1248	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1254	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1260	ND	4.60	20.0	"	"	"	"	"	"	
Surrogate: TCMX		*58 %*	*26-146*			"	"	"	"	
PC-02-05.0 (0911387-02) Soil	**Sampled: 11/16/09 10:15**		**Received: 11/16/09 15:37**							
Aroclor 1016	ND	4.60	20.0	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8082	
Aroclor 1221	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1232	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1242	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1248	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1254	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1260	ND	4.60	20.0	"	"	"	"	"	"	
Surrogate: TCMX		*56 %*	*26-146*			"	"	"	"	
PC-01-05.0 (0911387-03) Soil	**Sampled: 11/16/09 11:00**		**Received: 11/16/09 15:37**							
Aroclor 1016	ND	4.60	20.0	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8082	
Aroclor 1221	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1232	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1242	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1248	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1254	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1260	ND	4.60	20.0	"	"	"	"	"	"	
Surrogate: TCMX		*66 %*	*26-146*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Polychlorinated Biphenyls by EPA Method 8082

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-10.0 (0911387-04) Soil	**Sampled: 11/16/09 11:15**		**Received: 11/16/09 15:37**							
Aroclor 1016	ND	4.60	20.0	ug/kg	1	9111702	11/17/09	11/18/09	EPA 8082	
Aroclor 1221	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1232	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1242	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1248	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1254	ND	4.60	20.0	"	"	"	"	"	"	
Aroclor 1260	ND	4.60	20.0	"	"	"	"	"	"	
Surrogate: TCMX		*82 %*	*26-146*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil	**Sampled: 11/16/09 10:00**		**Received: 11/16/09 15:37**							
Acenaphthene	ND	5.12	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Acenaphthylene	ND	5.37	20.0	"	"	"	"	"	"	
Anthracene	ND	2.82	20.0	"	"	"	"	"	"	
Benzidine	ND	150	150	"	"	"	"	"	"	
Benzo (a) anthracene	**13.6**	3.09	20.0	"	"	"	"	"	"	J
Benzo (b) fluoranthene	**14.3**	3.09	20.0	"	"	"	"	"	"	J
Benzo (k) fluoranthene	ND	3.68	20.0	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	4.63	40.0	"	"	"	"	"	"	
Benzo (a) pyrene	**6.01**	3.07	20.0	"	"	"	"	"	"	J
Benzyl alcohol	ND	1.44	75.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	7.96	25.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**264**	5.72	45.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	3.71	20.0	"	"	"	"	"	"	
Butyl benzyl phthalate	**53.7**	4.11	40.0	"	"	"	"	"	"	
Carbazole	ND	4.94	60.0	"	"	"	"	"	"	
4-Chloroaniline	ND	4.42	100	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	8.34	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	6.11	20.0	"	"	"	"	"	"	
2-Chlorophenol	ND	6.48	20.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"	"	"	"	"	"	
Chrysene	**7.48**	2.87	20.0	"	"	"	"	"	"	J
Dibenz (a,h) anthracene	ND	5.00	40.0	"	"	"	"	"	"	
Dibenzofuran	ND	5.42	20.0	"	"	"	"	"	"	
Di-n-butyl phthalate	**9.73**	3.87	40.0	"	"	"	"	"	"	J
1,2-Dichlorobenzene	ND	9.07	20.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	8.51	20.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	8.55	20.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.26	150	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.32	20.0	"	"	"	"	"	"	
Diethyl phthalate	ND	1.61	20.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	2.40	80.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	3.36	20.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.9	100	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	4.08	20.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	6.02	20.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	4.61	40.0	"	"	"	"	"	"	
Fluoranthene	**8.00**	3.43	20.0	"	"	"	"	"	"	J

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil Sampled: 11/16/09 10:00 Received: 11/16/09 15:37										
Fluorene	ND	4.50	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Hexachlorobenzene	ND	3.10	20.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	7.09	20.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	6.98	50.0	"	"	"	"	"	"	
Hexachloroethane	ND	8.88	20.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"	"	"	"	"	"	
Isophorone	ND	7.56	20.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	7.62	20.0	"	"	"	"	"	"	
2-Methylphenol	ND	6.56	20.0	"	"	"	"	"	"	
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"	"	"	"	"	"	
Naphthalene	ND	7.25	20.0	"	"	"	"	"	"	
2-Nitroaniline	ND	3.91	50.0	"	"	"	"	"	"	
3-Nitroaniline	ND	6.54	100	"	"	"	"	"	"	
4-Nitroaniline	ND	5.49	70.0	"	"	"	"	"	"	
Nitrobenzene	ND	8.04	20.0	"	"	"	"	"	"	
2-Nitrophenol	ND	7.56	20.0	"	"	"	"	"	"	
4-Nitrophenol	ND	2.85	70.0	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	8.02	20.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	8.02	35.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"	"	"	"	"	"	
Pentachlorophenol	ND	6.02	40.0	"	"	"	"	"	"	
Phenanthrene	**5.69**	1.95	20.0	"	"	"	"	"	"	J
Phenol	ND	8.81	30.0	"	"	"	"	"	"	
Pyrene	**10.7**	2.88	20.0	"	"	"	"	"	"	J
Pyridine	ND	8.85	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.08	20.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	7.66	30.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.55	30.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*45 %*	*25-121*			"	"	"	"	
Surrogate: Phenol-d6		*45 %*	*24-113*			"	"	"	"	
Surrogate: Nitrobenzene-d5		*45 %*	*23-120*			"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*47 %*	*30-115*			"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*35 %*	*19-122*			"	"	"	"	
Surrogate: Terphenyl-dl4		*51 %*	*18-137*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-05.0 (0911387-02) Soil	**Sampled: 11/16/09 10:15**		**Received: 11/16/09 15:37**							
Acenaphthene	ND	5.12	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Acenaphthylene	ND	5.37	20.0	"	"	"	"	"	"	
Anthracene	ND	2.82	20.0	"	"	"	"	"	"	
Benzidine	ND	150	150	"	"	"	"	"	"	
Benzo (a) anthracene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	3.68	20.0	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	4.63	40.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	3.07	20.0	"	"	"	"	"	"	
Benzyl alcohol	ND	1.44	75.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	7.96	25.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**114**	5.72	45.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	3.71	20.0	"	"	"	"	"	"	
Butyl benzyl phthalate	**145**	4.11	40.0	"	"	"	"	"	"	
Carbazole	ND	4.94	60.0	"	"	"	"	"	"	
4-Chloroaniline	ND	4.42	100	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	8.34	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	6.11	20.0	"	"	"	"	"	"	
2-Chlorophenol	ND	6.48	20.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"	"	"	"	"	"	
Chrysene	ND	2.87	20.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.00	40.0	"	"	"	"	"	"	
Dibenzofuran	ND	5.42	20.0	"	"	"	"	"	"	
Di-n-butyl phthalate	**26.7**	3.87	40.0	"	"	"	"	"	"	J
1,2-Dichlorobenzene	ND	9.07	20.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	8.51	20.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	8.55	20.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.26	150	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.32	20.0	"	"	"	"	"	"	
Diethyl phthalate	**1.85**	1.61	20.0	"	"	"	"	"	"	J
2,4-Dimethylphenol	ND	2.40	80.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	3.36	20.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.9	100	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	4.08	20.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	6.02	20.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	4.61	40.0	"	"	"	"	"	"	
Fluoranthene	**3.51**	3.43	20.0	"	"	"	"	"	"	J

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-05.0 (0911387-02) Soil Sampled: 11/16/09 10:15 Received: 11/16/09 15:37										
Fluorene	ND	4.50	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Hexachlorobenzene	ND	3.10	20.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	7.09	20.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	6.98	50.0	"	"	"	"	"	"	
Hexachloroethane	ND	8.88	20.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"	"	"	"	"	"	
Isophorone	ND	7.56	20.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	7.62	20.0	"	"	"	"	"	"	
2-Methylphenol	ND	6.56	20.0	"	"	"	"	"	"	
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"	"	"	"	"	"	
Naphthalene	ND	7.25	20.0	"	"	"	"	"	"	
2-Nitroaniline	ND	3.91	50.0	"	"	"	"	"	"	
3-Nitroaniline	ND	6.54	100	"	"	"	"	"	"	
4-Nitroaniline	ND	5.49	70.0	"	"	"	"	"	"	
Nitrobenzene	ND	8.04	20.0	"	"	"	"	"	"	
2-Nitrophenol	ND	7.56	20.0	"	"	"	"	"	"	
4-Nitrophenol	ND	2.85	70.0	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	8.02	20.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	8.02	35.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"	"	"	"	"	"	
Pentachlorophenol	ND	6.02	40.0	"	"	"	"	"	"	
Phenanthrene	**3.83**	1.95	20.0	"	"	"	"	"	"	J
Phenol	ND	8.81	30.0	"	"	"	"	"	"	
Pyrene	**7.58**	2.88	20.0	"	"	"	"	"	"	J
Pyridine	ND	8.85	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.08	20.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	7.66	30.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.55	30.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*40 %*	*25-121*			"	"	"	"	
Surrogate: Phenol-d6		*39 %*	*24-113*			"	"	"	"	
Surrogate: Nitrobenzene-d5		*41 %*	*23-120*			"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*40 %*	*30-115*			"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*30 %*	*19-122*			"	"	"	"	
Surrogate: Terphenyl-dl4		*49 %*	*18-137*			"	"	"	"	

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-05.0 (0911387-03) Soil	**Sampled: 11/16/09 11:00**		**Received: 11/16/09 15:37**							
Acenaphthene	ND	5.12	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Acenaphthylene	ND	5.37	20.0	"	"	"	"	"	"	
Anthracene	ND	2.82	20.0	"	"	"	"	"	"	
Benzidine	ND	150	150	"	"	"	"	"	"	
Benzo (a) anthracene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	3.68	20.0	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	4.63	40.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	3.07	20.0	"	"	"	"	"	"	
Benzyl alcohol	ND	1.44	75.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	7.96	25.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**135**	5.72	45.0	"	"	"	"	"	"	
4-Bromophenyl phenyl ether	ND	3.71	20.0	"	"	"	"	"	"	
Butyl benzyl phthalate	**13.4**	4.11	40.0	"	"	"	"	"	"	J
Carbazole	ND	4.94	60.0	"	"	"	"	"	"	
4-Chloroaniline	ND	4.42	100	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	8.34	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	6.11	20.0	"	"	"	"	"	"	
2-Chlorophenol	ND	6.48	20.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"	"	"	"	"	"	
Chrysene	ND	2.87	20.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.00	40.0	"	"	"	"	"	"	
Dibenzofuran	ND	5.42	20.0	"	"	"	"	"	"	
Di-n-butyl phthalate	**4.96**	3.87	40.0	"	"	"	"	"	"	J
1,2-Dichlorobenzene	ND	9.07	20.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	8.51	20.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	8.55	20.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.26	150	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.32	20.0	"	"	"	"	"	"	
Diethyl phthalate	**2.77**	1.61	20.0	"	"	"	"	"	"	J
2,4-Dimethylphenol	ND	2.40	80.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	3.36	20.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.9	100	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	4.08	20.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	6.02	20.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	4.61	40.0	"	"	"	"	"	"	
Fluoranthene	ND	3.43	20.0	"	"	"	"	"	"	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-05.0 (0911387-03) Soil Sampled: 11/16/09 11:00 Received: 11/16/09 15:37										
Fluorene	ND	4.50	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Hexachlorobenzene	ND	3.10	20.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	7.09	20.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	6.98	50.0	"	"	"	"	"	"	
Hexachloroethane	ND	8.88	20.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"	"	"	"	"	"	
Isophorone	ND	7.56	20.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	7.62	20.0	"	"	"	"	"	"	
2-Methylphenol	ND	6.56	20.0	"	"	"	"	"	"	
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"	"	"	"	"	"	
Naphthalene	ND	7.25	20.0	"	"	"	"	"	"	
2-Nitroaniline	ND	3.91	50.0	"	"	"	"	"	"	
3-Nitroaniline	ND	6.54	100	"	"	"	"	"	"	
4-Nitroaniline	ND	5.49	70.0	"	"	"	"	"	"	
Nitrobenzene	ND	8.04	20.0	"	"	"	"	"	"	
2-Nitrophenol	ND	7.56	20.0	"	"	"	"	"	"	
4-Nitrophenol	ND	2.85	70.0	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	8.02	20.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	8.02	35.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"	"	"	"	"	"	
Pentachlorophenol	ND	6.02	40.0	"	"	"	"	"	"	
Phenanthrene	**2.68**	1.95	20.0	"	"	"	"	"	"	J
Phenol	ND	8.81	30.0	"	"	"	"	"	"	
Pyrene	**4.12**	2.88	20.0	"	"	"	"	"	"	J
Pyridine	ND	8.85	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.08	20.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	7.66	30.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.55	30.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*45 %*	*25-121*			"	"	"	"	
Surrogate: Phenol-d6		*44 %*	*24-113*			"	"	"	"	
Surrogate: Nitrobenzene-d5		*46 %*	*23-120*			"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*47 %*	*30-115*			"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*36 %*	*19-122*			"	"	"	"	
Surrogate: Terphenyl-dl4		*55 %*	*18-137*			"	"	"	"	

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-10.0 (0911387-04) Soil Sampled: 11/16/09 11:15 Received: 11/16/09 15:37										
Acenaphthene	ND	5.12	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Acenaphthylene	ND	5.37	20.0	"	"	"	"	"	"	
Anthracene	ND	2.82	20.0	"	"	"	"	"	"	
Benzidine	ND	150	150	"	"	"	"	"	"	
Benzo (a) anthracene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	3.09	20.0	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	3.68	20.0	"	"	"	"	"	"	
Benzo (g,h,i) perylene	ND	4.63	40.0	"	"	"	"	"	"	
Benzo (a) pyrene	ND	3.07	20.0	"	"	"	"	"	"	
Benzyl alcohol	ND	1.44	75.0	"	"	"	"	"	"	
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"	"	"	"	"	"	
Bis(2-chloroethyl)ether	ND	7.96	25.0	"	"	"	"	"	"	
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"	"	"	"	"	"	
Bis(2-ethylhexyl)phthalate	**36.1**	5.72	45.0	"	"	"	"	"	"	J
4-Bromophenyl phenyl ether	ND	3.71	20.0	"	"	"	"	"	"	
Butyl benzyl phthalate	ND	4.11	40.0	"	"	"	"	"	"	
Carbazole	ND	4.94	60.0	"	"	"	"	"	"	
4-Chloroaniline	ND	4.42	100	"	"	"	"	"	"	
4-Chloro-3-methylphenol	ND	8.34	20.0	"	"	"	"	"	"	
2-Chloronaphthalene	ND	6.11	20.0	"	"	"	"	"	"	
2-Chlorophenol	ND	6.48	20.0	"	"	"	"	"	"	
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"	"	"	"	"	"	
Chrysene	ND	2.87	20.0	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	5.00	40.0	"	"	"	"	"	"	
Dibenzofuran	ND	5.42	20.0	"	"	"	"	"	"	
Di-n-butyl phthalate	ND	3.87	40.0	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	9.07	20.0	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	8.51	20.0	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	8.55	20.0	"	"	"	"	"	"	
3,3'-Dichlorobenzidine	ND	5.26	150	"	"	"	"	"	"	
2,4-Dichlorophenol	ND	5.32	20.0	"	"	"	"	"	"	
Diethyl phthalate	ND	1.61	20.0	"	"	"	"	"	"	
2,4-Dimethylphenol	ND	2.40	80.0	"	"	"	"	"	"	
Dimethyl phthalate	ND	3.36	20.0	"	"	"	"	"	"	
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"	"	"	"	"	"	
2,4-Dinitrophenol	ND	10.9	100	"	"	"	"	"	"	
2,4-Dinitrotoluene	ND	4.08	20.0	"	"	"	"	"	"	
2,6-Dinitrotoluene	ND	6.02	20.0	"	"	"	"	"	"	
Di-n-octyl phthalate	ND	4.61	40.0	"	"	"	"	"	"	
Fluoranthene	ND	3.43	20.0	"	"	"	"	"	"	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-01-10.0 (0911387-04) Soil	**Sampled: 11/16/09 11:15**		**Received: 11/16/09 15:37**							
Fluorene	ND	4.50	20.0	ug/kg	1	9111701	11/17/09	11/17/09	EPA 8270C	
Hexachlorobenzene	ND	3.10	20.0	"	"	"	"	"	"	
Hexachlorobutadiene	ND	7.09	20.0	"	"	"	"	"	"	
Hexachlorocyclopentadiene	ND	6.98	50.0	"	"	"	"	"	"	
Hexachloroethane	ND	8.88	20.0	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"	"	"	"	"	"	
Isophorone	ND	7.56	20.0	"	"	"	"	"	"	
2-Methylnaphthalene	ND	7.62	20.0	"	"	"	"	"	"	
2-Methylphenol	ND	6.56	20.0	"	"	"	"	"	"	
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"	"	"	"	"	"	
Naphthalene	ND	7.25	20.0	"	"	"	"	"	"	
2-Nitroaniline	ND	3.91	50.0	"	"	"	"	"	"	
3-Nitroaniline	ND	6.54	100	"	"	"	"	"	"	
4-Nitroaniline	ND	5.49	70.0	"	"	"	"	"	"	
Nitrobenzene	ND	8.04	20.0	"	"	"	"	"	"	
2-Nitrophenol	ND	7.56	20.0	"	"	"	"	"	"	
4-Nitrophenol	ND	2.85	70.0	"	"	"	"	"	"	
N-Nitrosodimethylamine	ND	8.02	20.0	"	"	"	"	"	"	
N-Nitrosodiphenylamine	ND	8.02	35.0	"	"	"	"	"	"	
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"	"	"	"	"	"	
Pentachlorophenol	ND	6.02	40.0	"	"	"	"	"	"	
Phenanthrene	ND	1.95	20.0	"	"	"	"	"	"	
Phenol	ND	8.81	30.0	"	"	"	"	"	"	
Pyrene	ND	2.88	20.0	"	"	"	"	"	"	
Pyridine	ND	8.85	100	"	"	"	"	"	"	
1,2,4-Trichlorobenzene	ND	7.08	20.0	"	"	"	"	"	"	
2,4,5-Trichlorophenol	ND	7.66	30.0	"	"	"	"	"	"	
2,4,6-Trichlorophenol	ND	5.55	30.0	"	"	"	"	"	"	
Surrogate: 2-Fluorophenol		*43 %*	*25-121*			"	"	"	"	
Surrogate: Phenol-d6		*41 %*	*24-113*			"	"	"	"	
Surrogate: Nitrobenzene-d5		*43 %*	*23-120*			"	"	"	"	
Surrogate: 2-Fluorobiphenyl		*42 %*	*30-115*			"	"	"	"	
Surrogate: 2,4,6-Tribromophenol		*31 %*	*19-122*			"	"	"	"	
Surrogate: Terphenyl-dl4		*51 %*	*18-137*			"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

TPH by EPA 8015C

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
PC-02-01.0 (0911387-01) Soil	**Sampled: 11/16/09 10:00**		**Received: 11/16/09 15:37**							
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg	1	9111737	11/17/09	11/18/09	EPA 8015C	
Diesel (C10-C28)	ND	4.0	10.0	"	"	"	"	"	"	
Extended Range HC (C28-C40)	ND	10.0	10.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95 %*	*75-129*			"	"	"	"	
PC-02-05.0 (0911387-02) Soil	**Sampled: 11/16/09 10:15**		**Received: 11/16/09 15:37**							
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg	1	9111737	11/17/09	11/18/09	EPA 8015C	
Diesel (C10-C28)	ND	4.0	10.0	"	"	"	"	"	"	
Extended Range HC (C28-C40)	ND	10.0	10.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*97 %*	*75-129*			"	"	"	"	
PC-01-05.0 (0911387-03) Soil	**Sampled: 11/16/09 11:00**		**Received: 11/16/09 15:37**							
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg	1	9111737	11/17/09	11/18/09	EPA 8015C	
Diesel (C10-C28)	ND	4.0	10.0	"	"	"	"	"	"	
Extended Range HC (C28-C40)	ND	10.0	10.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95 %*	*75-129*			"	"	"	"	
PC-01-10.0 (0911387-04) Soil	**Sampled: 11/16/09 11:15**		**Received: 11/16/09 15:37**							
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg	1	9111737	11/17/09	11/18/09	EPA 8015C	
Diesel (C10-C28)	ND	4.0	10.0	"	"	"	"	"	"	
Extended Range HC (C28-C40)	ND	10.0	10.0	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94 %*	*75-129*			"	"	"	"	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111823											
Blank (9111823-BLK1)					Prepared & Analyzed: 11/18/09						
Antimony	ND	1.00	10.0	mg/kg							
Arsenic	ND	0.43	1.00	"							
Barium	ND	0.36	1.00	"							
Beryllium	ND	0.02	1.00	"							
Cadmium	ND	0.08	1.00	"							
Chromium	ND	0.40	1.00	"							
Cobalt	ND	0.10	1.00	"							
Copper	0.73	0.09	1.00	"							J
Lead	ND	0.79	1.00	"							
Molybdenum	ND	1.10	5.00	"							
Nickel	ND	0.31	1.00	"							
Selenium	0.65	0.52	1.00	"							J
Silver	ND	0.10	0.50	"							
Thallium	ND	0.46	1.00	"							
Vanadium	ND	0.20	1.00	"							
Zinc	ND	0.56	1.00	"							
LCS (9111823-BS1)					Prepared & Analyzed: 11/18/09						
Antimony	101	1.00	10.0	mg/kg	100		101	75-125			
Arsenic	96.6	0.43	1.00	"	100		97	75-125			
Barium	101	0.36	1.00	"	100		101	75-125			
Beryllium	106	0.02	1.00	"	100		106	75-125			
Cadmium	102	0.08	1.00	"	100		102	75-125			
Chromium	104	0.40	1.00	"	100		104	75-125			
Cobalt	103	0.10	1.00	"	100		103	75-125			
Copper	106	0.09	1.00	"	100		106	75-125			
Lead	102	0.79	1.00	"	100		102	75-125			
Molybdenum	106	1.10	5.00	"	100		106	75-125			
Nickel	103	0.31	1.00	"	100		103	75-125			
Selenium	99.0	0.52	1.00	"	100		99	75-125			
Silver	47.4	0.10	0.50	"	50.0		95	75-125			
Thallium	96.9	0.46	1.00	"	100		97	75-125			
Vanadium	107	0.20	1.00	"	100		107	75-125			
Zinc	101	0.56	1.00	"	100		101	75-125			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111823											
LCS Dup (9111823-BSD1)					Prepared & Analyzed: 11/18/09						
Antimony	101	1.00	10.0	mg/kg	100		101	75-125	0	20	
Arsenic	95.5	0.43	1.00	"	100		96	75-125	1	20	
Barium	102	0.36	1.00	"	100		102	75-125	1	20	
Beryllium	105	0.02	1.00	"	100		105	75-125	0.5	20	
Cadmium	102	0.08	1.00	"	100		102	75-125	0.7	20	
Chromium	105	0.40	1.00	"	100		105	75-125	1	20	
Cobalt	104	0.10	1.00	"	100		104	75-125	0.8	20	
Copper	107	0.09	1.00	"	100		107	75-125	1	20	
Lead	101	0.79	1.00	"	100		101	75-125	0.5	20	
Molybdenum	107	1.10	5.00	"	100		107	75-125	1	20	
Nickel	104	0.31	1.00	"	100		104	75-125	0.8	20	
Selenium	98.3	0.52	1.00	"	100		98	75-125	0.7	20	
Silver	48.1	0.10	0.50	"	50.0		96	75-125	1	20	
Thallium	96.6	0.46	1.00	"	100		97	75-125	0.4	20	
Vanadium	108	0.20	1.00	"	100		108	75-125	1	20	
Zinc	101	0.56	1.00	"	100		101	75-125	0.3	20	
Duplicate (9111823-DUP1)		**Source: 0911421-03**			Prepared & Analyzed: 11/18/09						
Antimony	ND	1.00	10.0	mg/kg		ND				20	
Arsenic	1.35	0.43	1.00	"		1.85			31	20	QR-02
Barium	2.25	0.36	1.00	"		2.26			0.4	20	
Beryllium	ND	0.02	1.00	"		ND				20	
Cadmium	ND	0.08	1.00	"		ND				20	
Chromium	1.04	0.40	1.00	"		1.16			11	20	
Cobalt	560	0.10	1.00	"		604			8	20	
Copper	0.29	0.09	1.00	"		0.45			45	20	QR-04, J
Lead	ND	0.79	1.00	"		ND				20	
Molybdenum	ND	1.10	5.00	"		ND				20	
Nickel	0.37	0.31	1.00	"		0.40			7	20	J
Selenium	1.93	0.52	1.00	"		2.25			15	20	
Silver	0.29	0.10	0.50	"		0.29			1	20	J
Thallium	ND	0.46	1.00	"		ND				20	
Vanadium	0.53	0.20	1.00	"		0.59			12	20	J
Zinc	53.0	0.56	1.00	"		56.3			6	20	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111823											
Matrix Spike (9111823-MS1)		**Source: 0911421-03**			Prepared & Analyzed: 11/18/09						
Antimony	82.5	1.00	10.0	mg/kg	92.6	ND	89	75-125			
Arsenic	88.6	0.43	1.00	"	92.6	1.85	94	75-125			
Barium	92.9	0.36	1.00	"	92.6	2.26	98	75-125			
Beryllium	95.1	0.02	1.00	"	92.6	ND	103	75-125			
Cadmium	92.8	0.08	1.00	"	92.6	ND	100	75-125			
Chromium	95.0	0.40	1.00	"	92.6	1.16	101	75-125			
Cobalt	595	0.10	1.00	"	92.6	604	NR	75-125			QM-4X
Copper	95.1	0.09	1.00	"	92.6	0.45	102	75-125			
Lead	91.2	0.79	1.00	"	92.6	ND	98	75-125			
Molybdenum	93.1	1.10	5.00	"	92.6	ND	100	75-125			
Nickel	93.4	0.31	1.00	"	92.6	0.40	100	75-125			
Selenium	97.0	0.52	1.00	"	92.6	2.25	102	75-125			
Silver	42.1	0.10	0.50	"	46.3	0.29	90	75-125			
Thallium	80.2	0.46	1.00	"	92.6	ND	87	75-125			
Vanadium	96.6	0.20	1.00	"	92.6	0.59	104	75-125			
Zinc	138	0.56	1.00	"	92.6	56.3	88	75-125			
Matrix Spike Dup (9111823-MSD1)		**Source: 0911421-03**			Prepared & Analyzed: 11/18/09						
Antimony	93.0	1.00	10.0	mg/kg	98.0	ND	95	75-125	12	20	
Arsenic	97.0	0.43	1.00	"	98.0	1.85	97	75-125	9	20	
Barium	102	0.36	1.00	"	98.0	2.26	101	75-125	9	20	
Beryllium	105	0.02	1.00	"	98.0	ND	107	75-125	10	20	
Cadmium	101	0.08	1.00	"	98.0	ND	104	75-125	9	20	
Chromium	104	0.40	1.00	"	98.0	1.16	105	75-125	9	20	
Cobalt	530	0.10	1.00	"	98.0	604	NR	75-125	12	20	QM-4X
Copper	105	0.09	1.00	"	98.0	0.45	106	75-125	10	20	
Lead	100	0.79	1.00	"	98.0	ND	102	75-125	10	20	
Molybdenum	103	1.10	5.00	"	98.0	ND	105	75-125	10	20	
Nickel	103	0.31	1.00	"	98.0	0.40	104	75-125	10	20	
Selenium	106	0.52	1.00	"	98.0	2.25	106	75-125	9	20	
Silver	46.1	0.10	0.50	"	49.0	0.29	94	75-125	9	20	
Thallium	89.7	0.46	1.00	"	98.0	ND	91	75-125	11	20	
Vanadium	106	0.20	1.00	"	98.0	0.59	108	75-125	10	20	
Zinc	140	0.56	1.00	"	98.0	56.3	86	75-125	2	20	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Total Metals by EPA 6000/7000 Series Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111926											
Blank (9111926-BLK1)					Prepared & Analyzed: 11/19/09						
Mercury	ND	0.02	0.05	mg/kg							
LCS (9111926-BS1)					Prepared & Analyzed: 11/19/09						
Mercury	0.20	0.02	0.05	mg/kg	0.200		101	75-125			
LCS Dup (9111926-BSD1)					Prepared & Analyzed: 11/19/09						
Mercury	0.22	0.02	0.05	mg/kg	0.200		108	75-125	7	20	
Duplicate (9111926-DUP1)		**Source: 0911387-03**			Prepared & Analyzed: 11/19/09						
Mercury	0.02	0.02	0.05	mg/kg		ND				20	J
Matrix Spike (9111926-MS1)		**Source: 0911387-03**			Prepared & Analyzed: 11/19/09						
Mercury	0.26	0.02	0.05	mg/kg	0.182	ND	145	75-125			QM-06
Matrix Spike Dup (9111926-MSD1)		**Source: 0911387-03**			Prepared & Analyzed: 11/19/09						
Mercury	0.20	0.02	0.05	mg/kg	0.185	ND	110	75-125	26	20	QM-06

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111702											
Blank (9111702-BLK1)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aldrin	ND	0.51	2.00	ug/kg							
alpha-BHC	ND	0.27	2.00	"							
beta-BHC	ND	0.43	2.00	"							
gamma-BHC (Lindane)	ND	0.35	2.00	"							
delta-BHC	ND	0.41	2.00	"							
alpha-Chlordane	ND	0.47	5.00	"							
gamma-Chlordane	ND	0.51	5.00	"							
Chlordane (Total)	ND	4.70	5.00	"							
4,4'-DDD	ND	0.49	2.00	"							
4,4'-DDE	ND	0.47	2.00	"							
4,4'-DDT	ND	0.32	2.00	"							
Dieldrin	ND	0.47	2.00	"							
Endosulfan I	ND	0.42	2.00	"							
Endosulfan II	ND	0.76	2.00	"							
Endosulfan sulfate	ND	0.48	2.00	"							
Endrin	ND	0.49	2.00	"							
Endrin aldehyde	ND	0.30	2.00	"							
Endrin ketone	ND	0.80	2.00	"							
Heptachlor	ND	0.71	2.00	"							
Heptachlor epoxide	ND	0.70	2.00	"							
Methoxychlor	ND	0.74	5.00	"							
Toxaphene	ND	8.80	25.0	"							
Surrogate: TCMX	*14.8*			"	*16.7*		*88*	*26-146*			
LCS (9111702-BS1)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aldrin	15.5	0.51	2.00	ug/kg	16.7		93	42-122			
gamma-BHC (Lindane)	15.3	0.35	2.00	"	16.7		92	32-127			
4,4'-DDT	17.7	0.32	2.00	"	16.7		106	25-160			
Dieldrin	16.3	0.47	2.00	"	16.7		98	36-146			
Endrin	18.1	0.49	2.00	"	16.7		108	30-147			
Heptachlor	17.2	0.71	2.00	"	16.7		103	34-111			
Surrogate: TCMX	*15.4*			"	*16.7*		*92*	*26-146*			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111702											
LCS Dup (9111702-BSD1)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aldrin	16.0	0.51	2.00	ug/kg	16.7		96	42-122	3	30	
gamma-BHC (Lindane)	15.6	0.35	2.00	"	16.7		94	32-127	2	30	
4,4'-DDT	18.2	0.32	2.00	"	16.7		109	25-160	3	30	
Dieldrin	16.7	0.47	2.00	"	16.7		100	36-146	3	30	
Endrin	18.4	0.49	2.00	"	16.7		111	30-147	2	30	
Heptachlor	17.3	0.71	2.00	"	16.7		104	34-111	0.4	30	
Surrogate: TCMX	*15.4*			"	*16.7*		*93*	*26-146*			
Duplicate (9111702-DUP1)			**Source: 0911387-01**		Prepared: 11/17/09 Analyzed: 11/18/09						
Aldrin	ND	0.51	2.00	ug/kg		ND				30	
alpha-BHC	ND	0.27	2.00	"		ND				30	
beta-BHC	ND	0.43	2.00	"		ND				30	
gamma-BHC (Lindane)	ND	0.35	2.00	"		ND				30	
delta-BHC	ND	0.41	2.00	"		ND				30	
alpha-Chlordane	ND	0.47	5.00	"		ND				30	
gamma-Chlordane	ND	0.51	5.00	"		ND				30	
Chlordane (Total)	ND	4.70	5.00	"		ND				30	
4,4'-DDD	ND	1.96	8.00	"		ND				30	
4,4'-DDE	ND	1.88	8.00	"		ND				30	
4,4'-DDT	ND	1.28	8.00	"		ND				30	
Dieldrin	ND	0.47	2.00	"		ND				30	
Endosulfan I	ND	0.42	2.00	"		ND				30	
Endosulfan II	ND	0.76	2.00	"		ND				30	
Endosulfan sulfate	ND	0.48	2.00	"		ND				30	
Endrin	ND	0.49	2.00	"		ND				30	
Endrin aldehyde	ND	0.30	2.00	"		ND				30	
Endrin ketone	ND	0.80	2.00	"		ND				30	
Heptachlor	ND	0.71	2.00	"		ND				30	
Heptachlor epoxide	ND	0.70	2.00	"		ND				30	
Methoxychlor	ND	0.74	5.00	"		ND				30	
Toxaphene	ND	8.80	25.0	"		ND				30	
Surrogate: TCMX	*9.60*			"	*16.7*		*58*	*26-146*			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Organochlorine Pesticides by EPA Method 8081B - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111702											
Matrix Spike (9111702-MS1)		**Source: 0911387-01**			Prepared: 11/17/09		Analyzed: 11/18/09				
Aldrin	13.4	2.55	10.0	ug/kg	16.7	ND	80	42-122			
gamma-BHC (Lindane)	13.3	1.75	10.0	"	16.7	ND	80	32-127			
4,4'-DDT	11.1	1.60	10.0	"	16.7	ND	67	25-160			
Dieldrin	13.6	2.35	10.0	"	16.7	ND	82	36-146			
Endrin	13.1	2.45	10.0	"	16.7	ND	79	30-147			
Heptachlor	11.9	3.55	10.0	"	16.7	ND	72	34-111			
Surrogate: TCMX	*12.2*			"	*16.7*		*73*	*26-146*			
Matrix Spike Dup (9111702-MSD1)		**Source: 0911387-01**			Prepared: 11/17/09		Analyzed: 11/18/09				
Aldrin	11.3	2.55	10.0	ug/kg	16.7	ND	68	42-122	17	30	
gamma-BHC (Lindane)	11.2	1.75	10.0	"	16.7	ND	67	32-127	17	30	
4,4'-DDT	9.88	1.60	10.0	"	16.7	ND	59	25-160	12	30	J
Dieldrin	11.2	2.35	10.0	"	16.7	ND	67	36-146	20	30	
Endrin	10.8	2.45	10.0	"	16.7	ND	65	30-147	19	30	
Heptachlor	9.50	3.55	10.0	"	16.7	ND	57	34-111	23	30	J
Surrogate: TCMX	*9.48*			"	*16.7*		*57*	*26-146*			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111702											
Blank (9111702-BLK1)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aroclor 1016	ND	4.60	20.0	ug/kg							
Aroclor 1221	ND	4.60	20.0	"							
Aroclor 1232	ND	4.60	20.0	"							
Aroclor 1242	ND	4.60	20.0	"							
Aroclor 1248	ND	4.60	20.0	"							
Aroclor 1254	ND	4.60	20.0	"							
Aroclor 1260	ND	4.60	20.0	"							
Surrogate: TCMX	*14.8*			"	*16.7*		*88*	*26-146*			
LCS (9111702-BS2)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aroclor 1260	155	4.60	20.0	ug/kg	167		93	8-127			
Surrogate: TCMX	*14.4*			"	*16.7*		*87*	*26-146*			
LCS Dup (9111702-BSD2)					Prepared: 11/17/09 Analyzed: 11/18/09						
Aroclor 1260	141	4.60	20.0	ug/kg	167		85	8-127	9	30	
Surrogate: TCMX	*15.2*			"	*16.7*		*91*	*26-146*			
Duplicate (9111702-DUP1)			**Source: 0911387-01**		Prepared: 11/17/09 Analyzed: 11/18/09						
Aroclor 1016	ND	4.60	20.0	ug/kg		ND				30	
Aroclor 1221	ND	4.60	20.0	"		ND				30	
Aroclor 1232	ND	4.60	20.0	"		ND				30	
Aroclor 1242	ND	4.60	20.0	"		ND				30	
Aroclor 1248	ND	4.60	20.0	"		ND				30	
Aroclor 1254	ND	4.60	20.0	"		ND				30	
Aroclor 1260	ND	4.60	20.0	"		ND				30	
Surrogate: TCMX	*9.60*			"	*16.7*		*58*	*26-146*			
Matrix Spike (9111702-MS2)			**Source: 0911387-02**		Prepared: 11/17/09 Analyzed: 11/18/09						
Aroclor 1260	130	23.0	100	ug/kg	167	ND	78	8-127			
Surrogate: TCMX	*9.60*			"	*16.7*		*58*	*26-146*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Polychlorinated Biphenyls by EPA Method 8082 - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111702											
Matrix Spike Dup (9111702-MSD2)			**Source: 0911387-02**		Prepared: 11/17/09		Analyzed: 11/18/09				
Aroclor 1260	117	23.0	100	ug/kg	167	ND	70	8-127	11	30	
Surrogate: TCMX	*8.02*			"	*16.7*		*48*	*26-146*			

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
Blank (9111701-BLK1)					Prepared & Analyzed: 11/17/09						
Acenaphthene	ND	5.12	20.0	ug/kg							
Acenaphthylene	ND	5.37	20.0	"							
Anthracene	ND	2.82	20.0	"							
Benzidine	ND	150	150	"							
Benzo (a) anthracene	ND	3.09	20.0	"							
Benzo (b) fluoranthene	ND	3.09	20.0	"							
Benzo (k) fluoranthene	ND	3.68	20.0	"							
Benzo (g,h,i) perylene	ND	4.63	40.0	"							
Benzo (a) pyrene	ND	3.07	20.0	"							
Benzyl alcohol	ND	1.44	75.0	"							
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"							
Bis(2-chloroethyl)ether	ND	7.96	25.0	"							
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"							
Bis(2-ethylhexyl)phthalate	ND	5.72	45.0	"							
4-Bromophenyl phenyl ether	ND	3.71	20.0	"							
Butyl benzyl phthalate	ND	4.11	40.0	"							
Carbazole	ND	4.94	60.0	"							
4-Chloroaniline	ND	4.42	100	"							
4-Chloro-3-methylphenol	ND	8.34	20.0	"							
2-Chloronaphthalene	ND	6.11	20.0	"							
2-Chlorophenol	ND	6.48	20.0	"							
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"							
Chrysene	ND	2.87	20.0	"							
Dibenz (a,h) anthracene	ND	5.00	40.0	"							
Dibenzofuran	ND	5.42	20.0	"							
Di-n-butyl phthalate	ND	3.87	40.0	"							
1,2-Dichlorobenzene	ND	9.07	20.0	"							
1,3-Dichlorobenzene	ND	8.51	20.0	"							
1,4-Dichlorobenzene	ND	8.55	20.0	"							
3,3'-Dichlorobenzidine	ND	5.26	150	"							
2,4-Dichlorophenol	ND	5.32	20.0	"							
Diethyl phthalate	ND	1.61	20.0	"							
2,4-Dimethylphenol	ND	2.40	80.0	"							
Dimethyl phthalate	ND	3.36	20.0	"							
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"							
2,4-Dinitrophenol	ND	10.9	100	"							
2,4-Dinitrotoluene	ND	4.08	20.0	"							
2,6-Dinitrotoluene	ND	6.02	20.0	"							

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
Blank (9111701-BLK1)					Prepared & Analyzed: 11/17/09						
Di-n-octyl phthalate	ND	4.61	40.0	ug/kg							
Fluoranthene	ND	3.43	20.0	"							
Fluorene	ND	4.50	20.0	"							
Hexachlorobenzene	ND	3.10	20.0	"							
Hexachlorobutadiene	ND	7.09	20.0	"							
Hexachlorocyclopentadiene	ND	6.98	50.0	"							
Hexachloroethane	ND	8.88	20.0	"							
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"							
Isophorone	ND	7.56	20.0	"							
2-Methylnaphthalene	ND	7.62	20.0	"							
2-Methylphenol	ND	6.56	20.0	"							
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"							
Naphthalene	ND	7.25	20.0	"							
2-Nitroaniline	ND	3.91	50.0	"							
3-Nitroaniline	ND	6.54	100	"							
4-Nitroaniline	ND	5.49	70.0	"							
Nitrobenzene	ND	8.04	20.0	"							
2-Nitrophenol	ND	7.56	20.0	"							
4-Nitrophenol	ND	2.85	70.0	"							
N-Nitrosodimethylamine	ND	8.02	20.0	"							
N-Nitrosodiphenylamine	ND	8.02	35.0	"							
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"							
Pentachlorophenol	ND	6.02	40.0	"							
Phenanthrene	ND	1.95	20.0	"							
Phenol	ND	8.81	30.0	"							
Pyrene	ND	2.88	20.0	"							
Pyridine	ND	8.85	100	"							
1,2,4-Trichlorobenzene	ND	7.08	20.0	"							
2,4,5-Trichlorophenol	ND	7.66	30.0	"							
2,4,6-Trichlorophenol	ND	5.55	30.0	"							
Surrogate: 2-Fluorophenol	*429*			"	*568*		*75*	*25-121*			
Surrogate: Phenol-d6	*441*			"	*568*		*78*	*24-113*			
Surrogate: Nitrobenzene-d5	*508*			"	*568*		*89*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*463*			"	*568*		*81*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*180*			"	*568*		*32*	*19-122*			
Surrogate: Terphenyl-dl4	*479*			"	*568*		*84*	*18-137*			

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Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
LCS (9111701-BS1)					Prepared & Analyzed: 11/17/09						
Acenaphthene	673	5.12	20.0	ug/kg	568		118	50-135			
4-Chloro-3-methylphenol	616	8.34	20.0	"	568		108	34-142			
2-Chlorophenol	654	6.48	20.0	"	568		115	38-125			
Di-n-butyl phthalate	613	3.87	40.0	"	568		108	44-152			
1,4-Dichlorobenzene	508	8.55	20.0	"	568		89	48-125			
2,4-Dinitrotoluene	534	4.08	20.0	"	568		94	41-144			
4-Nitrophenol	579	2.85	70.0	"	568		102	10-155			
N-Nitrosodi-n-propylamine	766	7.90	30.0	"	568		135	28-156			
Pentachlorophenol	384	6.02	40.0	"	568		68	21-133			
Phenol	653	8.81	30.0	"	568		115	35-120			
Pyrene	604	2.88	20.0	"	568		106	40-152			
1,2,4-Trichlorobenzene	538	7.08	20.0	"	568		95	47-125			
Surrogate: 2-Fluorophenol	*476*			"	*568*		*84*	*25-121*			
Surrogate: Phenol-d6	*476*			"	*568*		*84*	*24-113*			
Surrogate: Nitrobenzene-d5	*510*			"	*568*		*90*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*489*			"	*568*		*86*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*294*			"	*568*		*52*	*19-122*			
Surrogate: Terphenyl-dl4	*482*			"	*568*		*85*	*18-137*			
LCS Dup (9111701-BSD1)					Prepared & Analyzed: 11/17/09						
Acenaphthene	695	5.12	20.0	ug/kg	568		122	50-135	3	30	
4-Chloro-3-methylphenol	629	8.34	20.0	"	568		111	34-142	2	30	
2-Chlorophenol	661	6.48	20.0	"	568		116	38-125	1	30	
Di-n-butyl phthalate	623	3.87	40.0	"	568		110	44-152	2	30	
1,4-Dichlorobenzene	512	8.55	20.0	"	568		90	48-125	0.8	30	
2,4-Dinitrotoluene	547	4.08	20.0	"	568		96	41-144	2	30	
4-Nitrophenol	490	2.85	70.0	"	568		86	10-155	17	30	
N-Nitrosodi-n-propylamine	787	7.90	30.0	"	568		139	28-156	3	30	
Pentachlorophenol	394	6.02	40.0	"	568		69	21-133	2	30	
Phenol	661	8.81	30.0	"	568		116	35-120	1	30	
Pyrene	604	2.88	20.0	"	568		106	40-152	0.05	30	
1,2,4-Trichlorobenzene	555	7.08	20.0	"	568		98	47-125	3	30	
Surrogate: 2-Fluorophenol	*484*			"	*568*		*85*	*25-121*			
Surrogate: Phenol-d6	*470*			"	*568*		*83*	*24-113*			
Surrogate: Nitrobenzene-d5	*526*			"	*568*		*93*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*499*			"	*568*		*88*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*301*			"	*568*		*53*	*19-122*			
Surrogate: Terphenyl-dl4	*493*			"	*568*		*87*	*18-137*			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
Duplicate (9111701-DUP1)			**Source: 0911387-01**		Prepared & Analyzed: 11/17/09						
Acenaphthene	ND	5.12	20.0	ug/kg		ND				30	
Acenaphthylene	ND	5.37	20.0	"		ND				30	
Anthracene	ND	2.82	20.0	"		ND				30	
Benzidine	ND	150	150	"		ND				30	
Benzo (a) anthracene	ND	3.09	20.0	"		13.6				30	
Benzo (b) fluoranthene	ND	3.09	20.0	"		14.3				30	
Benzo (k) fluoranthene	ND	3.68	20.0	"		ND				30	
Benzo (g,h,i) perylene	ND	4.63	40.0	"		ND				30	
Benzo (a) pyrene	ND	3.07	20.0	"		6.01				30	
Benzyl alcohol	ND	1.44	75.0	"		ND				30	
Bis(2-chloroethoxy)methane	ND	7.26	20.0	"		ND				30	
Bis(2-chloroethyl)ether	ND	7.96	25.0	"		ND				30	
Bis(2-chloroisopropyl)ether	ND	8.81	25.0	"		ND				30	
Bis(2-ethylhexyl)phthalate	127	5.72	45.0	"		264			71	30	QR-02
4-Bromophenyl phenyl ether	ND	3.71	20.0	"		ND				30	
Butyl benzyl phthalate	15.8	4.11	40.0	"		53.7			109	30	QR-02, J
Carbazole	ND	4.94	60.0	"		ND				30	
4-Chloroaniline	ND	4.42	100	"		ND				30	
4-Chloro-3-methylphenol	ND	8.34	20.0	"		ND				30	
2-Chloronaphthalene	ND	6.11	20.0	"		ND				30	
2-Chlorophenol	ND	6.48	20.0	"		ND				30	
4-Chlorophenyl phenyl ether	ND	4.90	20.0	"		ND				30	
Chrysene	ND	2.87	20.0	"		7.48				30	
Dibenz (a,h) anthracene	ND	5.00	40.0	"		ND				30	
Dibenzofuran	ND	5.42	20.0	"		ND				30	
Di-n-butyl phthalate	6.44	3.87	40.0	"		9.73			41	30	QR-02, J
1,2-Dichlorobenzene	ND	9.07	20.0	"		ND				30	
1,3-Dichlorobenzene	ND	8.51	20.0	"		ND				30	
1,4-Dichlorobenzene	ND	8.55	20.0	"		ND				30	
3,3'-Dichlorobenzidine	ND	5.26	150	"		ND				30	
2,4-Dichlorophenol	ND	5.32	20.0	"		ND				30	
Diethyl phthalate	ND	1.61	20.0	"		ND				30	
2,4-Dimethylphenol	ND	2.40	80.0	"		ND				30	
Dimethyl phthalate	ND	3.36	20.0	"		ND				30	
4,6-Dinitro-2-methylphenol	ND	5.50	50.0	"		ND				30	
2,4-Dinitrophenol	ND	10.9	100	"		ND				30	
2,4-Dinitrotoluene	ND	4.08	20.0	"		ND				30	
2,6-Dinitrotoluene	ND	6.02	20.0	"		ND				30	

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
Duplicate (9111701-DUP1)			**Source: 0911387-01**		Prepared & Analyzed: 11/17/09						
Di-n-octyl phthalate	ND	4.61	40.0	ug/kg		ND				30	
Fluoranthene	ND	3.43	20.0	"		8.00				30	
Fluorene	ND	4.50	20.0	"		ND				30	
Hexachlorobenzene	ND	3.10	20.0	"		ND				30	
Hexachlorobutadiene	ND	7.09	20.0	"		ND				30	
Hexachlorocyclopentadiene	ND	6.98	50.0	"		ND				30	
Hexachloroethane	ND	8.88	20.0	"		ND				30	
Indeno (1,2,3-cd) pyrene	ND	4.33	30.0	"		ND				30	
Isophorone	ND	7.56	20.0	"		ND				30	
2-Methylnaphthalene	ND	7.62	20.0	"		ND				30	
2-Methylphenol	ND	6.56	20.0	"		ND				30	
4-Methylphenol (3-Methylphenol)	ND	6.24	40.0	"		ND				30	
Naphthalene	ND	7.25	20.0	"		ND				30	
2-Nitroaniline	ND	3.91	50.0	"		ND				30	
3-Nitroaniline	ND	6.54	100	"		ND				30	
4-Nitroaniline	ND	5.49	70.0	"		ND				30	
Nitrobenzene	ND	8.04	20.0	"		ND				30	
2-Nitrophenol	ND	7.56	20.0	"		ND				30	
4-Nitrophenol	ND	2.85	70.0	"		ND				30	
N-Nitrosodimethylamine	ND	8.02	20.0	"		ND				30	
N-Nitrosodiphenylamine	ND	8.02	35.0	"		ND				30	
N-Nitrosodi-n-propylamine	ND	7.90	30.0	"		ND				30	
Pentachlorophenol	ND	6.02	40.0	"		ND				30	
Phenanthrene	ND	1.95	20.0	"		5.69				30	
Phenol	ND	8.81	30.0	"		ND				30	
Pyrene	4.41	2.88	20.0	"		10.7			83	30	QR-02, J
Pyridine	ND	8.85	100	"		ND				30	
1,2,4-Trichlorobenzene	ND	7.08	20.0	"		ND				30	
2,4,5-Trichlorophenol	ND	7.66	30.0	"		ND				30	
2,4,6-Trichlorophenol	ND	5.55	30.0	"		ND				30	
Surrogate: 2-Fluorophenol	*234*			"	*568*		*41*	*25-121*			
Surrogate: Phenol-d6	*224*			"	*568*		*39*	*24-113*			
Surrogate: Nitrobenzene-d5	*236*			"	*568*		*42*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*234*			"	*568*		*41*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*152*			"	*568*		*27*	*19-122*			
Surrogate: Terphenyl-dl4	*228*			"	*568*		*40*	*18-137*			

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

Semivolatile Organic Compounds by EPA Method 8270C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111701											
Matrix Spike (9111701-MS1)		**Source: 0911387-01**			Prepared & Analyzed: 11/17/09						
Acenaphthene	634	5.12	20.0	ug/kg	568	ND	112	46-140			
4-Chloro-3-methylphenol	599	8.34	20.0	"	568	ND	105	42-139			
2-Chlorophenol	646	6.48	20.0	"	568	ND	114	30-135			
Di-n-butyl phthalate	580	3.87	40.0	"	568	9.73	100	24-152			
1,4-Dichlorobenzene	472	8.55	20.0	"	568	ND	83	36-137			
2,4-Dinitrotoluene	490	4.08	20.0	"	568	ND	86	28-145			
4-Nitrophenol	638	2.85	70.0	"	568	ND	112	23-150			
N-Nitrosodi-n-propylamine	714	7.90	30.0	"	568	ND	126	31-161			
Pentachlorophenol	436	6.02	40.0	"	568	ND	77	3-159			
Phenol	635	8.81	30.0	"	568	ND	112	31-138			
Pyrene	621	2.88	20.0	"	568	10.7	107	30-152			
1,2,4-Trichlorobenzene	506	7.08	20.0	"	568	ND	89	39-134			
Surrogate: 2-Fluorophenol	*470*			"	*568*		*83*	*25-121*			
Surrogate: Phenol-d6	*456*			"	*568*		*80*	*24-113*			
Surrogate: Nitrobenzene-d5	*473*			"	*568*		*83*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*471*			"	*568*		*83*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*362*			"	*568*		*64*	*19-122*			
Surrogate: Terphenyl-dl4	*516*			"	*568*		*91*	*18-137*			
Matrix Spike Dup (9111701-MSD1)		**Source: 0911387-01**			Prepared & Analyzed: 11/17/09						
Acenaphthene	597	5.12	20.0	ug/kg	568	ND	105	46-140	6	30	
4-Chloro-3-methylphenol	571	8.34	20.0	"	568	ND	101	42-139	5	30	
2-Chlorophenol	593	6.48	20.0	"	568	ND	104	30-135	9	30	
Di-n-butyl phthalate	544	3.87	40.0	"	568	9.73	94	24-152	6	30	
1,4-Dichlorobenzene	431	8.55	20.0	"	568	ND	76	36-137	9	30	
2,4-Dinitrotoluene	442	4.08	20.0	"	568	ND	78	28-145	10	30	
4-Nitrophenol	619	2.85	70.0	"	568	ND	109	23-150	3	30	
N-Nitrosodi-n-propylamine	647	7.90	30.0	"	568	ND	114	31-161	10	30	
Pentachlorophenol	408	6.02	40.0	"	568	ND	72	3-159	7	30	
Phenol	587	8.81	30.0	"	568	ND	103	31-138	8	30	
Pyrene	555	2.88	20.0	"	568	10.7	96	30-152	11	30	
1,2,4-Trichlorobenzene	471	7.08	20.0	"	568	ND	83	39-134	7	30	
Surrogate: 2-Fluorophenol	*428*			"	*568*		*75*	*25-121*			
Surrogate: Phenol-d6	*409*			"	*568*		*72*	*24-113*			
Surrogate: Nitrobenzene-d5	*435*			"	*568*		*77*	*23-120*			
Surrogate: 2-Fluorobiphenyl	*425*			"	*568*		*75*	*30-115*			
Surrogate: 2,4,6-Tribromophenol	*347*			"	*568*		*61*	*19-122*			
Surrogate: Terphenyl-dl4	*455*			"	*568*		*80*	*18-137*			

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: URS Corporation
Project Name: 27679010

EMA Log #: 0911387

TPH by EPA 8015C - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 9111737											
Blank (9111737-BLK1)					Prepared: 11/17/09 Analyzed: 11/18/09						
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg							
Diesel (C10-C28)	ND	4.0	10.0	"							
Extended Range HC (C28-C40)	ND	10.0	10.0	"							
Surrogate: 4-Bromofluorobenzene	*47.5*			"	*50.0*		*95*	*75-129*			
LCS (9111737-BS1)					Prepared & Analyzed: 11/17/09						
Gasoline (C6-C10)	200	4.0	10.0	mg/kg	200		100	75-125			
Diesel (C10-C28)	511	4.0	10.0	"	500		102	75-125			
Surrogate: 4-Bromofluorobenzene	*45.1*			"	*50.0*		*90*	*75-129*			
LCS Dup (9111737-BSD1)					Prepared & Analyzed: 11/17/09						
Gasoline (C6-C10)	182	4.0	10.0	mg/kg	200		91	75-125	9	30	
Diesel (C10-C28)	475	4.0	10.0	"	500		95	75-125	7	30	
Surrogate: 4-Bromofluorobenzene	*45.5*			"	*50.0*		*91*	*75-129*			
Duplicate (9111737-DUP1)			**Source: 0911387-04**		Prepared: 11/17/09 Analyzed: 11/18/09						
Gasoline (C6-C10)	ND	4.0	10.0	mg/kg		ND				30	
Diesel (C10-C28)	ND	4.0	10.0	"		ND				30	
Extended Range HC (C28-C40)	ND	10.0	10.0	"		ND				30	
Surrogate: 4-Bromofluorobenzene	*50.4*			"	*50.0*		*101*	*75-129*			
Matrix Spike (9111737-MS1)			**Source: 0911387-04**		Prepared: 11/17/09 Analyzed: 11/18/09						
Gasoline (C6-C10)	212	4.0	10.0	mg/kg	200	ND	106	75-125			
Diesel (C10-C28)	497	4.0	10.0	"	500	ND	99	75-125			
Surrogate: 4-Bromofluorobenzene	*49.5*			"	*50.0*		*99*	*75-129*			
Matrix Spike Dup (9111737-MSD1)			**Source: 0911387-04**		Prepared: 11/17/09 Analyzed: 11/18/09						
Gasoline (C6-C10)	186	4.0	10.0	mg/kg	200	ND	93	75-125	13	30	
Diesel (C10-C28)	513	4.0	10.0	"	500	ND	103	75-125	3	30	
Surrogate: 4-Bromofluorobenzene	*48.6*			"	*50.0*		*97*	*75-129*			

Notes and Definitions

QR-04	The RPD between the sample and sample duplicate is not valid since both results are below the reporting limit for this analyte.
QR-02	The RPD result exceeded the QC limits due to non-homogeneity of sample.
QM-4X	The spike recovery was outside of the QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance limits.
QM-06	Due to noted non-homogeneity of the QC sample matrix, the MS/MSD did not provide reliable results for accuracy and precision. Sample results for the QC batch were accepted based on LCS/LCSD percent recoveries and RPD values.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

CHAIN-OF-CUSTODY RECORD

– EnviroMatrix Analytical, Inc. —
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

NOV 16 '09 15:55

EMA LOG #: 0911387

Client: URS Corporation
Attn: Robert Scott (PG)
Samplers(s): Sam Haber
Address: 1615 Murray Canyon Rd #1000

Phone: 619-294-9400 Fax:
Email: sam_haber@urscorp.com Robert_Scott@urs....
Billing Address:

Project ID:
Project #: 27679010 PO #:

Requested Analysis

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Oil & Grease □ 413.1 □ 413.2 □ 1664	8015B (TPH) □ Gas □ Diesel X Ext	624/8260 (VOC) Full BTXE MTBE Oxy Nap	625 /(8270) (SVOC) □ PAH only	608 /(8081) (Organochlorine Pesticides)	608 /(8082) (Polychlorinated Biphenyls)	8141 (Organophosphorus Pesticides)	TBT (Organotin Compounds)	□ pH □ EC □ TSS □TDS	□ Nitrate □ Nitrite □ TKN □NH3	CAC Title 22/CAM17 Metals □ TTLC □ STLC	TCLP (RCRA) □ Metals □ Organics	Cd Cr Cu Pb Ni Ag Zn □ Dissolved	Coliform, □ Total (MTF) □ Fecal (MTF)	Colilert, T+E.Coli □ P/A □ Enumeration	Enterococcus, □ MTF □ Enterolert	Heterotrophic Plate Count (HPC)	□ BOD □ COD □ Cyanide
1	PC-02-01.0	11/16/09	1000	Soil	1/g		X		X	X	X					X						
2	PC-02-05.0	↓	1015	Soil	2/g		X		X	X	X					X						
3	PC-01-05.0		1100	Soil	1/g		X		X	X	X					X						
4	PC-01-10.0	↓	1115	Soil	1/g		X		X	X	X					X						
5																						
6																						
7																						
8																						
9																						
10																						

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid

Shipped By: □ Courier □ UPS □ FedEx □ USPS X Client Drop Off' □ Other

[1]**Turn-Around-Time:** □ Same Day □ 24 hr □ 48 hr □ 3 day □ 4 day □ 5 day X STD (7 day)

[1]**Reporting Requirements:** □ Fax X PDF X Excel □ Geotracker/EDF □ Hard Copy □ EDT

[1]**Sample Disposal:** X By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: (Yes) No N/A	Containers Properly Preseved: Yes No N/A
Custody Seals Intact: (Yes) No N/A	Temp @ Receipt:_____
COC/Labels Agree: (Yes) No N/A	Sampled By: Client EMA Autosampler

	RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature	Sam Haber	11/16/09	Matt Legcler
Print	Sam Haber	1537	
Company:	URS Corp		EMA
Signature			
Print			
Company:			
Signature			
Print			
Company:			

Project/Sample Comments:

1 °C on ice

[1] Additional costs may apply, consult a project manager for details

[2] EMA reserves the right to return any samples that do not match our waste profile.

NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.