# RECORD OF DECISION ESTES LANDFILL WQARF REGISTRY SITE PHOENIX, ARIZONA

Arizona Department of Environmental Quality 1110 West Washington Street Phoenix, Arizona 85007



# Estes Landfill WQARF Registry Site Record of Decision

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### 1.0 DECLARATION

### 1.1 Site Name and Location

This Record of Decision (ROD) is for the Estes Landfill Water Quality Assurance Revolving Fund (WQARF) Registry Site (Site), located in Phoenix, Maricopa County, Arizona. The Site is located adjacent to and south of the Salt River between 40<sup>th</sup> and 44<sup>th</sup> Streets. The source of contamination was a former liquid waste disposal pit near the eastern edge of the Site (Figure 1). The Site was placed on the WQARF Registry in April of 1998 with an eligibility and evaluation score of 45 out of a possible 120.

# 1.2 Purpose

This ROD presents the selected remedial action for contaminants of concern (COCs) in groundwater at the Site in accordance with Arizona Revised Statute (A.R.S.) §49-287.04. The decision in this ROD is based upon previous activities and investigations conducted and performed for this Site and documented in the Arizona Department of Environmental Quality (ADEQ) Administrative Records file. The State of Arizona, acting by and through ADEQ, has selected the remedy detailed in this document.

### **1.3** Site Description

The Estes Landfill was operated by a commercial refuse and disposal company from the early 1950s through 1972. The Estes Landfill was permanently closed as a commercial disposal site in 1972. Flooding along the Salt River in 1978, 1979 and 1980 caused substantial damage to both public and private property along the river, including the Phoenix Sky Harbor International Airport (PSHIA). As a result, City of Phoenix (COP) in conjunction with local, State, and Federal flood control and transportation agencies developed a program of river channelization and bank stabilization. To complete the project, a large portion of the Estes Landfill that was located in the Salt River bed had to be moved. In 1982, COP acquired the Estes Landfill through eminent domain and a landfill relocation project was initiated. Hazardous wastes were segregated and shipped offsite for disposal. Most of the remaining material in the riverbed was excavated and moved onto the southern portion of the Site, out of the riverbed (ESE, 1999).

While in operation, the Estes Landfill accepted liquid wastes that would now be classified as hazardous wastes. Bulk liquids were discharged into ponds excavated in the refuse pits. Coring data collected in the Estes Landfill suggest that the maximum pit depth was about 50 feet, with approximately 40% of the landfill within the 35 to 50 foot depth range (ESE, 1999).

Groundwater contamination was discovered in two industrial supply wells located downgradient of the Estes Landfill between 1980 and 1982. One well (Bradley Well) was on the Bradley Landfill, the other (Tanner Well) on the former Tanner property, west of 40<sup>th</sup> Street. Both wells have been abandoned since discovery of contamination. The primary contaminants detected were cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC). Lower concentrations of other VOCs and metals were also detected. In the mid-1980s, Arizona Department of Health Services (ADHS) conducted groundwater sampling of eight monitoring wells, four on the Site and four on the Bradley Landfill, which confirmed the presence of groundwater contamination in the area. The greatest concentration of VOCs was detected in groundwater monitoring well EW-E, located near the former liquid waste disposal pit on the Site (Figure 1).

From 1987 to 1997, several phases of remedial investigation were conducted at the Site in support of the Remedial Investigation (RI) Final Report. The investigation included (ESE, 1999):

- Drilling and installation of groundwater monitoring wells and piezometers;
- Collection of soil, groundwater, and soil gas samples;
- Geophysical surveys and several aquifer tests; and
- Performance of both bench scale and pilot scale treatability tests.

The data compiled during this phase of the remedial investigation was used to develop a detailed Site Conceptual Model (SCM) which was presented in the RI Final Report. The SCM provided specific information on site conditions as they related to site hydrology, groundwater contamination sources, groundwater chemistry, and human health RAs. In addition, the RI Final Report provided information on the movement, fate and transport of the groundwater plume and identified the former liquid waste disposal pit located near the southeast corner of the Site as the source of VOC contamination in groundwater (AMEC, 2015).

In January 2002, ADEQ issued the Final Remedial Objectives (ROs) Report, which established ROs for current and reasonably foreseeable Site land and water uses. Land use ROs addressed the soil covered landfill and included (ADEQ, 2002):

- A trail linkage between the Tempe Town Lake and the Phoenix Rio Salado Project for pedestrian, bike, and equestrian use;
- Redevelopment of the landfill for commercial or recreational by an outside developer;
- Surface or structure parking, surface storage, or construction of buildings and structures by the COP Aviation Department; and
- Temporary use for material processing and a concrete batch plant.

All of the above land uses were considered reasonably foreseeable, but as concluded by investigations that have been completed and the 2002 Feasibility Study (FS) Report, the source of the groundwater contamination is the former liquid waste disposal pit and not the soil covered landfill. After relocation and separation of hazardous material, the relocated landfill only contained the debris and refuse that was disposed of at Estes Landfill and there has been no indication that the relocated landfill is impacting groundwater quality. The location of the former liquid waste disposal pit is also no longer within the boundary of the relocated landfill. Therefore, landfill actions such as soil cover maintenance, methane management, storm water management, institutional controls, and security would not be a concern of the ADEQ WQARF program and would be the responsibility of the property owner. Based on this, the land use ROs issued in 2002 are no longer applicable (AMEC, 2015).

Water use ROs addressed the then current use of the Bradley Well and future, reasonably foreseeable uses by COP, the area water provider, for additional groundwater supplies potentially within the vicinity of the landfill. Water use ROs included (ADEQ, 2002):

Protect, restore, replace, or otherwise provide a water supply should use of the Bradley Well
be impaired or lost due contamination emanating from the Estes Landfill Site. The action
will be needed for as long as the Bradley Well is in use and its use is threatened, impaired or
lost as a result of contamination from the Site.

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• Restore, replace, or otherwise provide for COP water supply if the COP needs groundwater in the vicinity of the Estes Landfill area and the identified water resource is impaired or lost by contamination emanating from the Site. The water supply to be provided for will include the potential production of one well pumping approximately 2 million gallons per day, with a utilization factor of 75%. This action would not be needed prior to the year 2020 and will be needed for as long as the level of contamination originating from the Estes Landfill plume

Of the two water use ROs, only that which pertains to the reasonably foreseeable use of groundwater by COP is still applicable to the Site. The Bradley Well was abandoned in 2013, negating the RO pertaining to the current use of the well.

in the identified groundwater resource prohibits or limits its use.

Based on data collected during the RI, Estes Landfill is underlain by approximately 115 to 175 feet of heterogeneous alluvial sediments and several hundred feet of consolidated sedimentary bedrock. The alluvium beneath the Site contains sediments (cobbles, gravel, sand and fines) of similar composition with differing hydraulic properties, which results from differences in the degree of sorting of the sediments. The RI Final Report identified four distinct alluvial hydrostratigraphic units. The units, listed from the ground surface downward, include:

- Unit F1, an unconfined highly permeable aquifer where saturated, from the surface to approximately 60 feet below ground surface (bgs);
- Unit F2, a semi-confined low permeability aquitard from approximately 60 to 90 feet bgs;
- Unit F3, a semi-confined medium permeability aquitard from approximately 90 feet bgs to the underlying sedimentary bedrock which ranges in depth from approximately 115 to 175 feet bgs(Unit F4); and
- Unit F4, a well consolidated bedrock unit that correlates with the Tertiary Tempe Beds and (older) Tertiary Camelshead Formations which is approximately 600 feet thick.

The contacts between the alluvial units are gradational, whereas the contact with underlying bedrock (Unit F4) is well defined. Unit F2 is not continuous throughout the Site, and where the F2 Unit is absent, Units F1 and F3 are considered to be one unconfined alluvial aquifer (AMEC, 2015).

### 1.4 Assessment of the Site

The Site has undergone various phases of contaminant investigation and assessment including remedial investigation, human health risk assessment, and soil, soil vapor, ambient air, and groundwater evaluations. A detailed summary of investigative activities conducted at the Site was presented in the revised Proposed Remedial Action Plan (PRAP), prepared by AMEC Foster Wheeler in 2015, and a general summary of the chronology of major activities conducted at the Site is included in Section 2.1 of this ROD.

General statistical analyses of historical groundwater quality data conducted during the RI was used to select compounds in groundwater that were the result of onsite and offsite activities. Compounds that met both the following criteria were selected:

- The chemical compound was detected at a concentration that exceeded its respective Aquifer
  Water Quality Standard (AWQS) or other regulatory standard, or had no AWQS or
  regulatory standard; and
- The chemical compound was an analyte for a minimum of 20 rounds of groundwater sample analyses and the chemical compound was detected in at least 5% of the rounds for which it was an analyte.

The statistical analysis indicated that concentrations of VC, trans-1,2-dichloroethene, cis-1,2-DCE, trichloroethene (TCE), 1,2-dichlorobenzene (1,2-DCB), chlorobenzene, 1,1-dichloroethene (1,1-DCE), 1,4-dichlorobenzene (1,4-DCB), tetrachloroethene (PCE), benzene, 1,2-dichloroethane (1,2-DCA), chloroform, bis (2-ethylhexyl) phthalate, arsenic, barium, chromium, cadmium, lead, manganese, and nitrate as N existed at detectable levels in Site groundwater as a result of onsite and offsite activities. However, volatile organic compounds (VOCs) VC, cis-1,2-DCE and TCE were identified as signature compounds that are unique to the Site plume (ESE, 1999).

Groundwater monitoring and RI activities conducted since 1999 indicated that of the compounds identified as resulting from onsite and offsite activities, TCE, benzene, chlorobenzene, cis-1,2-DCE, and VC have been detected at concentrations above their respective AWQS or Health Based Guidance Level (HBGL). TCE was last detected above its AWQS of 5.0 micrograms per liter (µg/L) in 2006, and prior to that in 2000. The declining trend in TCE detections and concentrations at the Site indicated that TCE has attenuated through reductive dechlorination to levels below its AWQS.

Benzene was last detected above its AWQS of 5.0 µg/L in 2012. Chlorobenzene was last detected

above its HBGL of 140  $\mu$ g/L in 2012. Detections of benzene and chlorobenzene have been sporadic and generally occur concurrently during a groundwater monitoring event. Cis-1,2-DCE and VC have been consistently detected above their AWQSs of 70  $\mu$ g/L and 2.0  $\mu$ g/L, respectively.

Based upon the previous investigations and assessments conducted at the Site, cis-1,2-DCE, VC, benzene and chlorobenzene have been identified as COCs present in Site groundwater. Cis-1,2-DCE and VC are degradation byproducts of TCE. Benzene is a degradation byproduct of chlorobenzene. As of March 2016, the only VOCs to exceed AWQSs were VC and cis-1,2-DCE (AMEC, 2016).

The source of Site VOC impact was identified as a former liquid waste disposal pit (AMEC, 2015). The former liquid waste disposal pit was contained within the southeast portion of the original footprint of the Estes Landfill, which operated commercially from the early 1950s through 1972. In 1982, the COP obtained the landfill through eminent domain, then relocated a large portion of the landfill as part of a Salt River channelization and stabilization program (ESE, 1999). Since relocation, the current boundary of the landfill does not include the former liquid waste disposal pit. Figure 1 shows the former and current landfill boundaries, as well as the former liquid waste disposal pit.

Investigative activities conducted at the Site have led to vertical and lateral characterization of groundwater COCs. The RI Final Report concluded that vertical contamination of groundwater was generally limited to the upper three alluvial hydrostratigraphic units, or from groundwater surface to about 115 feet bgs (ESE, 1999). Groundwater monitoring activities conducted since the RI Final Report was issued have confirmed the general lateral extent of contamination. As of March 2016, the lateral extent of groundwater contamination at the Site generally extended west from the source area and was bound by monitoring well EW-NW, approximately 1,600 feet from the source area. VC had the greatest lateral extent of groundwater COCs and eclipsed the extent of other COCs at the Site. Therefore, the lateral extent of COC contamination is defined by the lateral extent of VC at the Site. Figure 2 shows the lateral extent of COCs in groundwater at the Site in March 2016.

A 2002 Human Health Risk Assessment (HHRA) Update included a review of analytical results from soil samples collected during investigative activities conducted at the Site. The review of analytical results for surficial soil samples indicated that no surface soil contaminant concentrations exceeded non-residential Soil Remediation Levels (SRLs), and that no COCs were present in surface

soils. The review of analytical results for subsurface soil samples indicated that lead, 1,2,4-trimethylbenzene (1,2,4-TMB), and arsenic were COCs present in subsurface soils due to exceedances of their respective non-residential SRLs and their frequency of detection. Comparison of groundwater data to soil contaminant concentrations confirmed that these compounds do not contribute to the Site groundwater COC plume. In addition, the HHRA Update confirmed that there were no other human exposure routes associated with the presence of these compounds in subsurface soils (HESE, 2002b).

The RI Final Report identified benzene, chlorobenzene, 1,2-DCB, 1,3-dichlorobenzene, 1,4-DCB, 1,1-dichloroethane, 1,1-DCE, total 1,2-dichloroethene, ethylbenzene, Freon 11, Freon 113, toluene, PCE, 1,1,1-trichloroethane, TCE, VC and total xylenes as COCs in soil vapor at the Site. The results from two HHRAs (ADHS, 1995) (HESE, 2002b) and an ambient air monitoring event conducted by Harding ESE in 2002 at the Site indicated that soil gas COCs identified in the RI Final Report presented a negligible risk to human health. Results from analyses of air samples collected during the ambient air monitoring event indicated that all detected compounds were below their respective Arizona Ambient Air Quality Guidelines (AMEC, 2015).

Two risk assessments (RAs), performed by the ADHS and Harding Lawson Associates, concluded that the media of concern at the Site was groundwater and the main COC was VC. In addition, both RAs concluded that there were no current public health risks associated with the Site, and no complete exposure pathway for groundwater (ADHS, 1995) (HESE, 2002b).

A health consultation was prepared by ADHS in 2016 to determine if concentrations of VC and cis-1,2-DCE detected during the April and December 2014, and March 2015 Site groundwater sampling events presented a risk to human health. The highest concentrations of VC (120 μg/L) and cis-1,2-DCE (280 μg/L) detected during the sampling events was used to develop adult estimated daily exposure doses based on a non-food related industrial water use. The estimated daily exposure dose for VC (0.00001 mg/kg/day) was compared to its respective Reference Dose Media Evaluation Guide (RMEG), Environmental Media Evaluation Guide (EMEG), and Cancer Risk Evaluation Guide (CREG). The estimated daily exposure dose for cis-1,2-DCE (0.00003 mg/kg/day) was compared only to its respective RMEG, as no EMEG nor CREG have been developed for the compound. The potential exposure pathway for this water to children has been eliminated, therefore daily exposure doses for children were not estimated. The health consultation concluded that ADHS

did not expect any non-cancer or cancer health effect from use of Site groundwater for non-food related industrial purposes due to concentrations of VC or cis-1,2-DCE (ADHS, 2016).

# 1.5 Description of the Selected Remedy

The selected remedy for the Site is monitored natural attenuation (MNA). Site conditions supportive of natural attenuation are evidenced by the reduction of contaminant concentrations over time and with distance from the source area. Since 1993, concentrations of groundwater COCs have declined by up to two orders of magnitude at some locations (AMEC, 2015). Groundwater contaminant concentrations generally decline west (downgradient) of the source area to below laboratory detection limits within 1,600 feet of the former liquid waste disposal pit. Natural attenuation will be monitored by collecting groundwater quality and flow data from the existing monitoring well network. The existing monitoring well network is comprised of monitoring wells located cross- and downgradient of the source area and screened in the four alluvial hydrostratigraphic units identified at the Site.

# 1.6 Statutory Determinations

ADEQ completed the RI Final (ESE, 1999) and Feasibility Study (FS) (HESE, 2002a) Reports in July 1999 and July 2002, respectively. Both reports were completed pursuant to A.R.S. §49-287.03. The RI Final Report:

- Established the nature and extent of the contamination and the sources thereof;
- Identified current and potential impacts to public health, welfare and the environment;
- Identified current and reasonable foreseeable uses of land and waters of the state; and
- Obtained and evaluated information necessary for identification and comparison of alternative remedial actions.

Based on this information, the FS evaluated three different remedial options and identified a preferred remedy for use at the Site. The FS:

- Provided for the development of a reference remedy and at least two alternative remedies which were capable of achieving all of the ROs;
- Insured that the reference remedy was based upon best engineering, geological, or hydrogeological judgment;

- Provided one alternative remedy that was more aggressive than the reference remedy; and
- Provided one alternative remedy that was less aggressive than the reference remedy.

In accordance with A.R.S. §49-287.04, the revised Proposed Remedial Action Plan (PRAP) discussed the reference remedy recommended by the FS Report, selected a proposed remedy and provided costs to implement the proposed remedy. Public comments on the original PRAP (HESE, 2002c) and revised PRAP (AMEC, 2015) were solicited and received. A comprehensive responsiveness summary is included in Appendix A. The revised PRAP:

- Identified the boundaries of the Site;
- Described results of the RI and FS;
- Described the proposed remedy and its estimated costs; and
- Described how the remedial goals and selection factors were evaluated.

Pursuant to A.R.S. §49-287.04(H), this ROD is the final administrative decision as defined under A.R.S. §41-1092. The selected remedy for the Site is MNA because it meets the following criteria:

- Adequately assures the protection of public health and welfare of the environment;
- To the extent practicable, provides for the control, management and cleanup of Site COCs maximizing beneficial use of the groundwater; and
- Is reasonable, necessary, cost-effective and technically feasible.

# 2.0 SITE CHRONOLOGY AND CURRENT CONDITIONS

# 2.1 Chronology of Events

A detailed history of investigations completed at the Site is provided in the RI Final Report and the FS Report. The following provides a brief summary of the main events and investigative milestones for the Site:

Table 1 Chronology of Major Events Estes Landfill WOARF Site

Year	Activity	Who	
1980	Contamination found in groundwater at Bradley Well	ADHS	
1981	Memorandum of Understanding, regarding relocation of Estes Landfill, currently located in Salt River	COP & ADHS	
1982	Relocation of approximately 30 acres of landfill material, under supervision of ADHS	ADHS	
1982	Excavation activities overseen by HDR Engineering, Inc. (HDR). Summarized in HDR Report: Salt River Channelization & Landfill Relocation, Final Report	HDR	
1982	Screened materials determined to be nonhazardous.  Moved to portion of Estes Landfill out of riverbed.	HDR	
1982	Screened materials determined to be Resource Conservation and Recovery Act (RCRA) Hazardous Waste (HW) and transported to a HW landfill in California.	HDR	
1982	Four Monitoring wells installed on or near Estes Landfill (EW-E, EW-W, EW-NE, EW-NW) pursuant to agreement with ADHS	СОР	
Feb 1982	ADHS Bureau of Waste Control: Open Dump Inventory of 40th Street Landfill	ADHS	
June 1982	Subsequent Report: Supplemental Data to the Uncontrolled Site of Estes Landfill	ADHS	
1982b	VC concentrations: 4,970 µg/L in EW-E: 3,060 µg/L in monitoring well EW-W. The data prompted continued ADHS investigation at the Estes Landfill.	ADHS	
Early 1980's	Arizona Department of Transportation (ADOT) evaluated the alignment of a new freeway (Highway 153). Based on data presented to ADOT, the freeway was moved eastward to avoid relocation of the Bradley Landfill.	ADOT	
1987	Comprehensive groundwater quality investigation	СОР	

Table 1 Chronology of Major Events Estes Landfill WQARF Site

Year	Activity	Who
Tour	Sergent, Hauskins & Beckwith (SH&B) contracted to	VV IIO
1987	evaluate problems associated with relocation of eastern	ADOT
1707	portion of Bradley Landfill	11201
	Available hydrogeologic information pertaining to Estes	
1006	Landfill historic water quality data from 1982 - 1984.	ADIIC
1986	ADHS report concluded Estes Landfill was a likely	ADHS
	source of groundwater contamination	
	ADEQ & U.S. Environmental Protection Agency (EPA)	
Sept	Region IX collected groundwater samples which	ADEQ, EPA Region IX
1986	contained elevated concentrations of VC (56 to 1,435	112 = Q, =111 110g1011 111
	µg/L)	
1987	Harding Lawson Associates (HLA) contracted to evaluate impact of Estes Landfill on upper alluvial unit	COP/HLA
1907	aquifer (implementing work plan)	COP/HLA
Jan-Feb	Six monitoring wells installed. The wells were sampled	
1989	in April, June, September & December 1989	COP
	Report: Estes Landfill, Phase I Groundwater Quality	
	Investigation, Phoenix, Arizona. Work conducted with	
1990	ADEQ supervision, high levels of VOCs in groundwater	HLA/COP
	confirmed. Also, presence of liquid waste disposal pit	
	confirmed	
1990-	Phase II Groundwater Quality Investigation	HLA/COP
1992	Thase it Groundwater Quanty investigation	
Sept	Estes Landfill <i>RI/FS RI Draft Report</i>	HLA/COP/BO
1997		
July 1999	RI Final Report	ESE/ADEQ
1999-		
2001	Groundwater monitoring in support of RI/FS	ESE/HESE/ADEQ
July		HEGE/ADEO
2001	Land and Water Study Report	HESE/ADEQ
January	Demodial Objectives Deport	ADEQ
2002	Remedial Objectives Report	ADEQ
June	Initial <i>PRAP</i> that was issued for public comment but was	HEGE/ADEO
2002	not finalized	HESE/ADEQ
July		
2002	Feasibility Study Report	HESE/ADEQ
2005-	On-going groundwater monitoring to assist in selection	MACTEC/AMEC/ADEQ
Current	of final remedy by the PRAP	

Table 1 Chronology of Major Events Estes Landfill WQARF Site

Year	Activity	Who
2013	Bradley Well Abandoned	СОР
2015	Revised PRAP issued	AMEC/ADEQ

### 2.2 Groundwater Conditions

Evaluation of groundwater data from June 1999 through March 2016 indicated historical trends in groundwater elevation, flow direction, and COC concentrations. Groundwater elevations at the Site have generally decreased since 1999, with several abrupt increases in elevation between 2004 and 2008. Since 2008, groundwater elevations have steadily decreased. As of March 2016, groundwater at the Site was generally at its lowest recorded elevation since June 1999, with depths to water measured at approximately 57 to 95 feet bgs. Groundwater data collected since 1999 generally indicated a westerly groundwater flow direction across the Site, except in Unit F4. Flow direction in Unit F4 was not monitored due to poor hydraulic conductivity, poor areal coverage by monitoring wells, and the lack of VOC detections in Unit F4 groundwater. Contaminant concentrations in groundwater have been declining over time and with distance from the source area. The declining trend in contaminant concentrations at the Site indicated that conditions supporting natural attenuation of contaminants were present at the Site (AMEC 2015).

Evaluation of groundwater data from March 2016 indicated current trends in groundwater elevation, flow direction, and COC concentrations. Groundwater elevations at the Site were generally lower than elevations observed during the previous groundwater monitoring event. The decreased groundwater elevations in March 2016 support the historical trend of decreasing groundwater elevations at the Site. Site groundwater flowed in a westerly direction in March 2016, which was consistent with historical flow direction trends. Figure 3 shows March 2016 groundwater elevations and contours. Water quality data from March 2016 indicated that the only COCs to exceed their respective AWQSs were VC and cis-1,2-DCE, and that COC exceedances of AWQSs were limited to Units F2 and F3. Detected VC concentrations exceeding the AWQS of  $2.0 \,\mu\text{g/L}$  ranged from  $2.4 \,\mu\text{g/L}$ . Detected cis-1,2-DCE concentrations exceeding the AWQS of  $3.0 \,\mu\text{g/L}$  ranged from  $3.0 \,\mu\text{g/L}$ . Figure 2 shows the March 2016 areal extent of COC exceedances of AWQSs (AMEC, 2016).

### 3.0 SELECTED REMEDY

# 3.1 Remedy Determination

The FS Report was prepared by Harding ESE in 2002 to evaluate remedial alternatives for Site COCs. The report was prepared in accordance with Arizona Administrative Code (A.A.C.) R18-16-407 and relied upon the data contained in the RI Final Report, prepared by ESE in 1999. The remedial alternatives and preferred remedial action presented by the FS Report were developed to meet the ROs issued by ADEQ in 2002. The revised PRAP, prepared by AMEC Foster Wheeler in 2015, amended the preferred remedial action outlined in the FS Report to include only the former liquid waste disposal pit as the contaminant source (AMEC, 2015). The preferred remedial action was amended based on reevaluation of the ROs and excludes landfill actions, as described in Section 1.3 of this ROD.

The HHRA Update (HESE, 2002b) examined the analytical results from ambient air quality monitoring samples collected at the Site. The HHRA Update concluded that organic compounds in soil gas posed a negligible health risk and that COCs detected in the samples were significantly less than their respective Arizona Ambient Air Quality Guidelines. Due to the lack of human health risk from soil gas at the Site, it is not necessary for the selected remedy to address soil gas.

As concluded by the investigations that have been conducted at the Site, the source of the groundwater contamination at the Site is the former liquid waste disposal pit. The current soil covered landfill is not a source of Site contamination and does not contribute to Site groundwater impacts (AMEC 2015). Furthermore, the HHRA Update concluded that potential exposure to surficial soils presents a negligible health risk and that subsurface soils lack an effective exposure pathway to receptors (HESE, 2002b). Thus, it is not necessary for the selected remedy to protect Land Use ROs from potential impacts caused by the composition or condition of the landfill.

The media of concern at the Site is groundwater and the COCs are benzene, chlorobenzene, cis-1,2-DCE and VC. Benzene is sporadically detected above its AWQS. Chlorobenzene is sporadically detected above its HBGL. Both cis-1,2-DCE and VC have been consistently detected above their respective AWQSs. During March 2016, concentrations of VC exceeded the AWQS of 2.0 µg/L in nine monitoring wells and concentrations of cis-1,2 DCE exceeded the AWQS of 70 µg/L in three monitoring wells at the Site. Benzene and chlorobenzene were not detected above their respective

AWQS or HBGL in any monitoring wells sampled during March 2016 (AMEC, 2016). Contaminant concentrations in groundwater have been declining over time and with distance from the source area, indicating that Site conditions exist in which natural attenuation is reducing the concentrations of the COCs in groundwater through a combination of reductive dechlorination and direct oxidation (AMEC, 2015).

The preferred remedial action that was selected by the FS Report was amended to the proposed remedial action by the revised PRAP. The proposed remedial action was MNA, and has been selected by the ROD as the remedy for the Site.

### 3.2 Remedy Determination-Groundwater

MNA will be implemented as described by the revised PRAP. The selected remedy includes monitoring and sampling of groundwater from 20 existing monitoring wells for a period of 15 years. The wells to be monitored and sampled, along with the hydrostratiographic unit in which they are screened, are as follows:

- Wells screened within Unit F1: EW-1, EW-14, and EW-PZ6;
- Wells screened within Unit F2: EW-PZ1, EW-PZ2, EW-PZ5, and EW-PZ9;
- Wells screened within Unit F3: EW-5, EW-6, EW-9, EW-19, EW-27, EW-W, EW-NW, EW-E, EW-PZ3, and EW-PZ10; and
- Wells screened within Unit F4: EW-8, EW-15, and EW-26.

There are a total of 20 monitoring wells included in the initial monitoring well network. This network may be reduced as groundwater levels decline and/or the areal extent of the COC plume decreases over time.

Groundwater monitoring and sampling will be conducted biannually for the first five years and annually for the following 10 years, for a total of 15 years. Groundwater samples will be analyzed for VOCs and results will be used to monitor contaminant migration and attenuation as contaminant mass is dissolved and degraded. Water level measurements will be used to evaluate trends in groundwater elevation and flow direction. The results of each groundwater monitoring and sampling event will be presented in an annual monitoring report that will be added to the Site information repository.

The remedy will remain in place until groundwater COCs are no longer present above respective AWQS or HBGL, or the Director determines that the conditions of A.R.S §49-282.06[D] have been met. When the remedy has been completed ADEQ owned groundwater monitoring wells will be

abandoned and the Site will be delisted.

3.3 Demonstration of Compliance with A.R.S. §49-282.06

MNA has been selected as the remedy for the Site. Based on a comparison with other remedial alternatives described in the FS Report, the selected remedy:

1. Adequately assures the protection of public health, welfare, and the environment;

2. To the extent practicable, provides for the control, management and cleanup of COC

contamination, maximizing beneficial use of groundwater; and

3. Is reasonable, necessary, cost-effective, and technically feasible.

The remedy is consistent with A.R.S. §49-282.06 as it provides protection to the public by providing control of hazardous substances with natural attenuation and monitoring. Future use of Site groundwater by private or municipal well owners in the area is not anticipated based on the Land

and Water Use Study (ADEQ & HESE, 2001).

3.4 Consistency with General Land Use Plans

The Site is located in a mixed commercial/industrial area of the COP and is projected to remain as

such for the foreseeable future. There is no indication that COP will change the current land use

from commercial/industrial to any other use, specifically one that is residential. For this reason, the

remedy is consistent with COP land use planning.

3.5 Consistency with General Water Use Plans

Groundwater is currently not being used within the Estes Community Involvement Area (ECIA).

The Tanner Well and the Bradley Well, formerly operational production wells near the Site, have

been abandoned. Future use of Site groundwater by private or municipal well owners in the area is

not anticipated for the following reasons:

• Groundwater within the ECIA is not of high quality, containing high total dissolved solids

and nitrate concentrations.;

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- The ECIA is serviced by city water. The cost to install a groundwater well would far exceed the cost to connect to city water.; and
- According to the Arizona Department of Water Resources (ADWR), there are no water rights
  in the ECIA that would allow for the installation of a non-exempt well producing over 35
  gallons per minute.

Considering current water use conditions, the Land and Water Use Study, and the above listed reasons, the selected remedy is capable of achieving the ROs for groundwater use and is consistent with planned water uses at the Site.

# 3.6 Remedy Commencement and Duration

The remedy will formally begin once the ROD is fully executed and entered into ADEQ's Administrative Record. The remedy will remain in place until COCs are no longer present above their respective AWQS or HBGL, or the Director determines that the conditions of A.R.S §49-282.06[D] have been met. For cost estimating purposes, ADEQ calculates the duration of this remedy as 15 years based on current groundwater data trends.

# 3.7 Cleanup and Performance Standards

Table 2.
Groundwater Cleanup Levels for Contaminant of Concern
Estes Landfill WQARF Registry Site

Contaminant	Cleanup Level	Basis for Cleanup Level
Benzene	5.0 μg/L	AWQS
Chlorobenzene	140 μg/L	HBGL
cis-1,2-DCE	70 μg/L	AWQS
VC	2.0 µg/L	AWQS

# 3.8 Community Involvement and Acceptance

ADEQ has completed the required community involvement and public comment requirements for the Site. The Site has been the subject of public involvement since 1980, when the ADHS discovered contaminated groundwater downgradient of the Estes Landfill. In addition, the community has been kept advised of investigative and cleanup activities at the Site through presentations by ADEQ, CAB meetings and various public notices, as documented in Table 3.

Table 3.
Community Involvement Activities
Estes Landfill WQARF Registry Site

<b>Community Involvement Activities</b>	Regulatory Citation/Rule	Date
Establish Community Involvement	A.R.S. § 49-289.02(A)	
Area (CIA), Revision of CIA		January 1997, April 1999
Notice of the Site listing on the	A.R.S. § 49-287.01	
Registry	A.R.S. § 49-289.03(A)	March 10-13, 1998
	A.R.S. § 49-289.02(B)	
Hazardous substance contamination	A.R.S. § 49-287.03(B)	
notice and fact sheet	A.A.C. R18-16-404(C)(1)(i)	spring 1995
	A.R.S. § 49-287.03(D)	
	A.R.S. § 49-289.03(C)	
	A.A.C. R18-16-403(E)	
Community Involvement Plan (CIP)	A.A.C. R18-16-404(C)	January 1997
Establish Community Advisory Board		
(CAB) selection committee	A.R.S. § 49-289.03(D)	February 2000
	A.R.S. § 49-289.03(C)	
Establish CAB	A.R.S. § 49-289.03(F)(1)	February 2000
	A.R.S. § 49-287.03(B)	
	A.R.S. § 49-287.03(C)	
Notice of RI scope of work, fact sheet,	A.A.C. R18-16-403(F)	
and outline of CIP	A.A.C. R18-16-403(G)	March 10-13, 1998
Establish information repository	A.R.S. § 49-289.03(B)	March 1998
Questionnaires mailed for draft Land		
and Water Use Study	A.A.C. R18-16-404	April 1, 2000
Notice of opportunity to comment on	A.A.C. R18-16-404(C)(1)(b)	
RI Draft Report	A.A.C. R18-16-406(F)	NA*
	A.A.C. R18-16-404(C)(1)(b)	
Public meeting(s) to establish ROs	A.A.C. R18-16-406(I)	May 8, 2000
Notice of opportunity to comment on	A.A.C. R18-16-404(C)(1)(c)	
proposed RO report	A.A.C. R18-16-406(I)	July 2001
Public meeting(s) to discuss		July 31, 2001
proposed/revised RO report if needed	A.A.C. R18-16-406(I)(5)	September 10, 2001
Notice of availability of RI Final and		
RO Reports	A.A.C. R18-16-406	January 2002
Notice of availability of the FS work		
plan	A.A.C. R18-16-404(C)(1)(d)	January 3, 2002
Issue notice of availability and		
opportunity to comment on the PRAP,	A.R.S. § 49-287.04(B)	June 27, 2002
Revised PRAP	A.A.C. R18-16-404(C)(1)(e)	April 2, 2015

Notice of ROD & Responsiveness	A.R.S. § 49-287.04 (G)	
Summary Availability	A.A.C. R18-16-404(C)(1)(f)	Notice will be published

NA\* - Not Applicable - A.A.C. was not promulgated until March 2002, after the release of the RI Draft Report

### 3.9 Remedy Review

Per A.A.C. R18-16-410(B)(8), the time-frame for periodic review of the remedy selected by this ROD is set at five year intervals, but may be conducted at closer intervals at the discretion of ADEQ. Each periodic review will determine the effectiveness of the remedy at achieving the Site ROs. Periodic reviews are to include:

- Evaluation of time versus Site COC concentration trends;
- Site groundwater flow and elevation trends;
- Current and future groundwater use of the ECIA and COP as it relates to the Site;
- Estimated time required to achieve cleanup goals;
- Evaluation and rational for the implementation of alternative remedial technologies and strategies that can reduce the time and/or cost to achieve Site closure;
- Evaluation of the remedy's ongoing ability to remain protective of human health and the environment; and
- Rational for closing the Site pursuant to A.R.S §49-282.06[D], if appropriate.

The findings from periodic reviews may be used to amend the ROD per AAC R18-16-410(E).

4.0 COST ESTIMATE FOR SELECTED REMEDY

The estimated costs of the remedy include recoverable remedial action costs incurred by the State

and projected future remedial action costs. As required in A.A.C. R18-16-410(C), the following are

costs for Site characterization and projected future remedial action costs, excluding non-recoverable

costs incurred by ADEQ.

4.1 Historic Costs

Groundwater contamination was discovered in two industrial supply wells between 1980 and 1982.

Investigation of the Site by ADEQ began in 1987 and will continue as the selected remedy is

implemented. Significant costs have been incurred by ADEQ during characterization of the Site.

These activities to date have cost ADEQ \$1,700,736.81.

**4.2** Future Costs

The selected remedy is cost-effective for mitigating the risks posed by COCs in contaminated

groundwater at the Site. The selected remedy requires groundwater monitoring until COC

concentrations are below their respective AWQS. The length of the remedy is estimated to be 15

years, but may be modified through the periodic review process.

For cost estimation purposes, the monitoring program will consist of the following:

• Depth to water in wells will be measured twice each year for the first five years of the remedy,

and once per year for the last 10 years of the remedy.;

• Groundwater samples will be collected twice each year for the first five years of the remedy,

and once per year for the last 10 years of the remedy. A total of 24 samples, including two

duplicate and two rinsate samples, will be collected during each sampling event. The

groundwater samples will be analyzed for VOCs using EPA Method 8260B.; and

• Two periodic reviews, occurring after years five and 10 of the remedy.

For cost estimation purposes, delisting the Site will consist of the following:

• Well abandonment of approximately 2,762 linear feet.;

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- Surface completion removal from 25 wells.; and
- Contractor mobilization for 6 days.

The cost breakdown for completing the remedy and Site delisting is for 15 years. The costs for years 1 through 15 are as follows:

Table 4.
Future Remedial Action Costs
Estes Landfill WQARF Registry Site

ADEQ Fiscal Year	Remedy Year	Annual Cost	Notes
2017	1	\$14,161	biannual monitoring
2018	2	\$35,801	biannual monitoring
2019	3	\$48,080	biannual monitoring
2020	4	\$49,522	biannual monitoring
2021	5	\$51,008	biannual monitoring
2022	6	\$30,968	annual monitoring, periodic review
2023	7	\$26,269	annual monitoring
2024	8	\$27,057	annual monitoring
2025	9	\$27,869	annual monitoring
2026	10	\$28,705	annual monitoring
2027	11	\$35,030	annual monitoring, periodic review
2028	12	\$30,453	annual monitoring
2029	13	\$31,367	annual monitoring
2030	14	\$32,308	annual monitoring
2031	15	\$102,777	annual monitoring and delisting/well abandonment
	Total Cost:		\$571,375
Average Annual Costs:		\$38,092	

Costs estimated assuming a 3% annual inflation rate

The total cost for remedy implementation is \$571, 375.

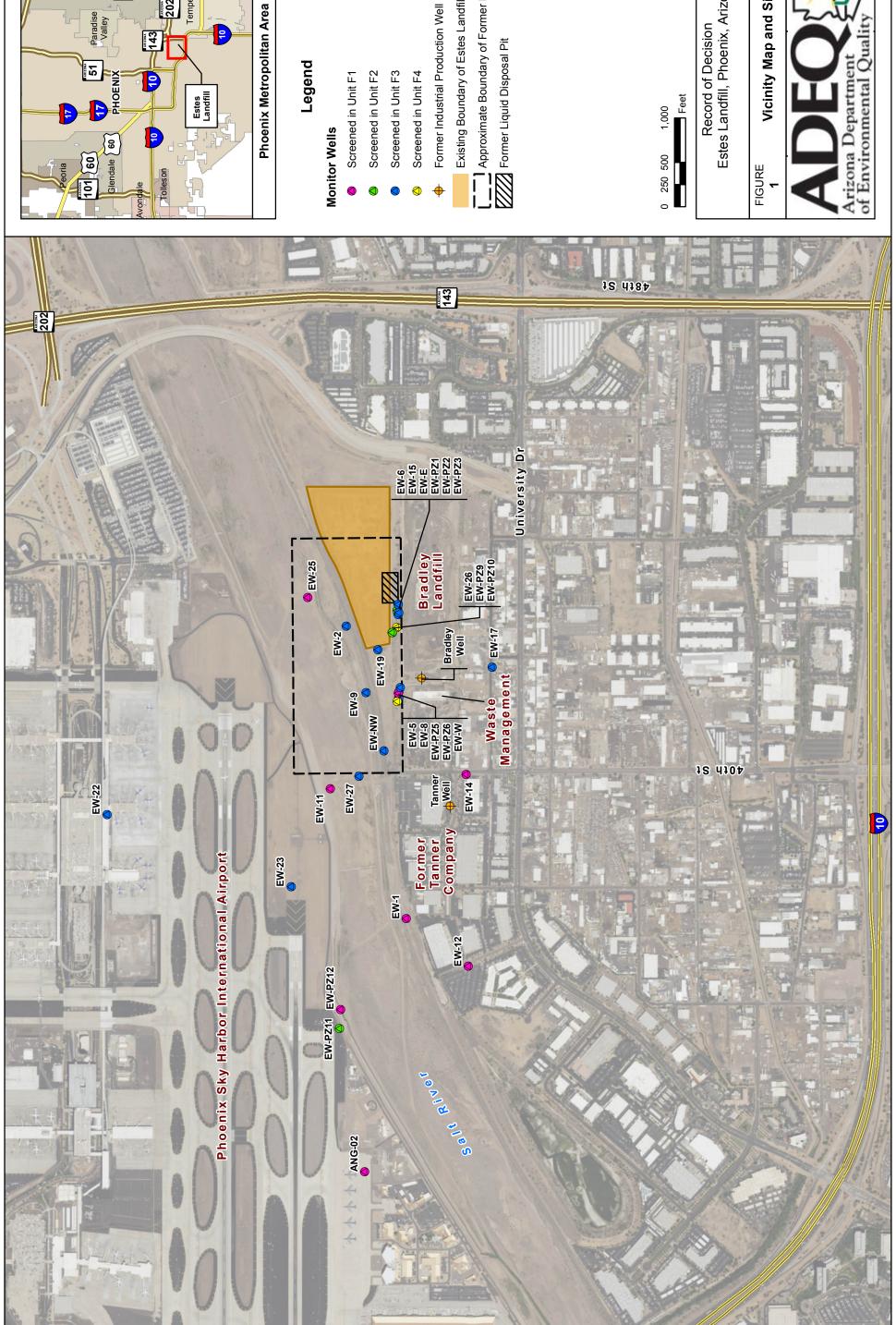
# 5.0 CONCLUSIONS

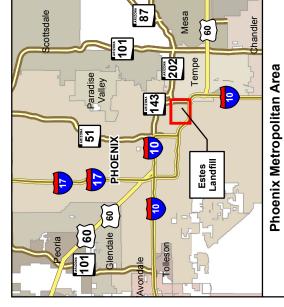
The chosen remedy for COCs in groundwater associated with the Site is natural attenuation and monitoring and sampling of groundwater. The remedy selected is necessary because it provides protection to the public by preventing exposure to the contaminated groundwater and meets the ROs in a reasonable, cost-effective, and technically feasible manner.

### 6.0 REFERENCES

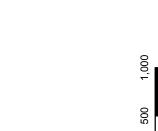
- AMEC Foster Wheeler (AMEC), 2015. Proposed Remedial Action Plan, Estes Landfill WQARF Registry Site, Phoenix, Arizona, February 9
- AMEC, 2016. Groundwater Monitoring Report, 1<sup>st</sup> Quarter 2016 Monitoring Event, Estes Landfill WQARF Registry Site, Phoenix, Arizona, April 19
- Arizona Department of Environmental Quality and Harding ESE (ADEQ & HESE), 2001. Land and Water Study, A Supplement to the RI Report, Estes Landfill WQARF Site, Phoenix, Arizona, July 9.
- Arizona Department of Environmental Quality (ADEQ), 2002. Final Remedial Objectives Report, Estes Landfill WQARF Site, Phoenix, Arizona, January 15.
- Arizona Department of Health Services (ADHS), 1995. Draft Human Health Risk Assessment, Estes Landfill, Phoenix, Arizona, August.
- ADHS, 2016. Health Consultation, Evaluation of Water Sampling Results, Estes Landfill WQARF Registry Site, Phoenix, Maricopa County, Arizona, January 21.
- Environmental Science and Engineering (ESE), 1999. Remedial Investigation Final Report, Estes Landfill, Phoenix, Arizona, July 30.
- Harding ESE (HESE), 2002a. Final Feasibility Study Report, Estes Landfill WQARF Registry Site, Phoenix, Arizona, July.
- HESE, 2002b. Human Health Risk Assessment Update, Estes Landfill, Phoenix, Arizona, June.
- HESE, 2002c. Final Proposed Remedial Action Plan, ADEQ Estes Landfill WQARF Site, Phoenix, Arizona, June 27.
- HESE 2002d, Groundwater Modeling Report, Estes Landfill WQARF Registry Site, Phoenix, Arizona, June 19.
- Harding Lawson Associates (HLA), 1997. Estes Landfill RI/FS RI Draft Report, Phoenix, Arizona, September

# **FIGURES**



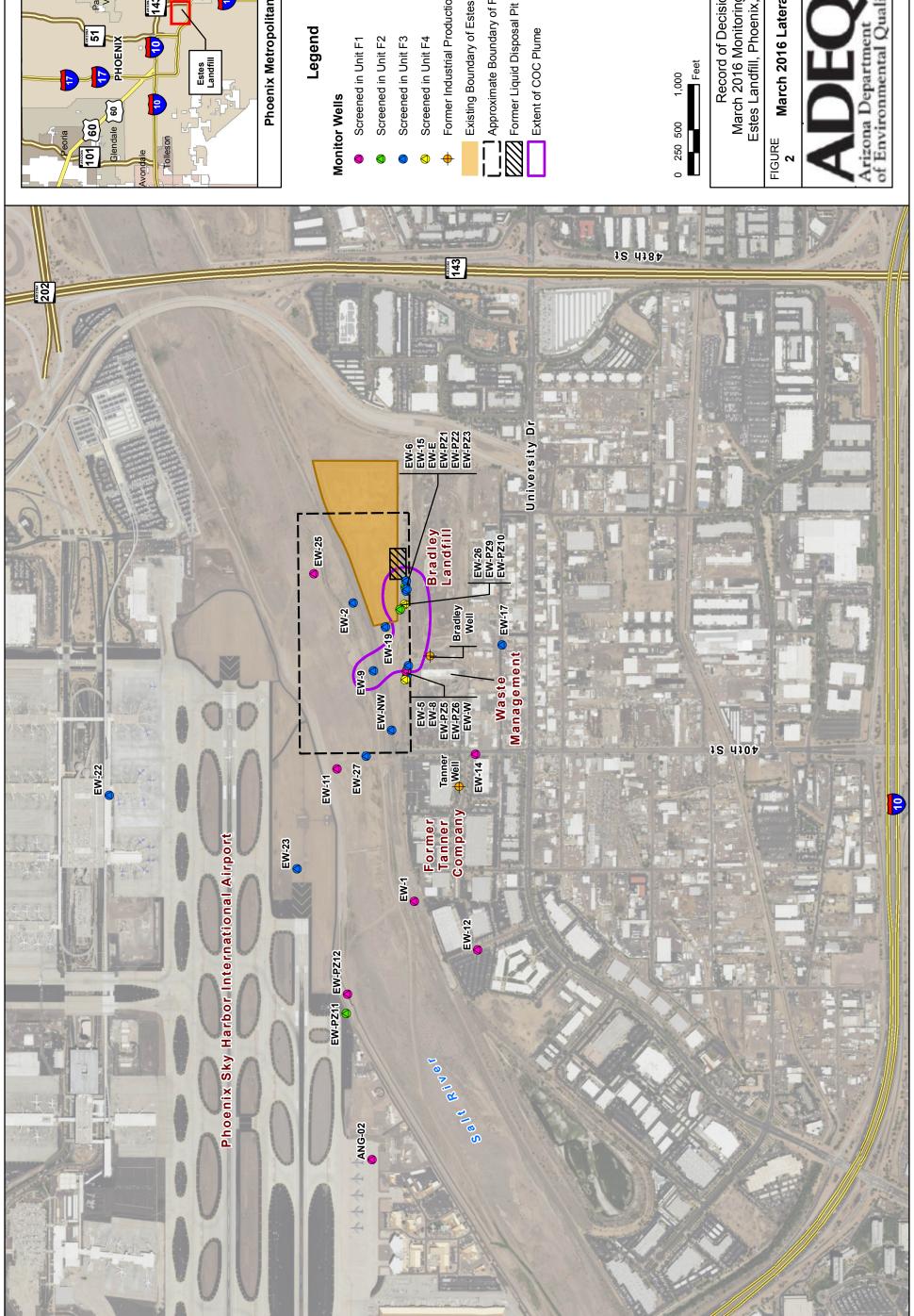


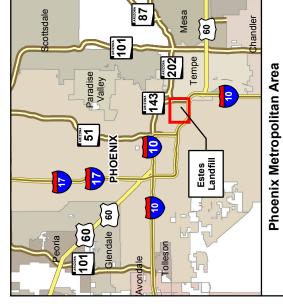
- Existing Boundary of Estes Landfill
- Approximate Boundary of Former Landfill





Vicinity Map and Site Plan Arizona Department of Environmental Quality



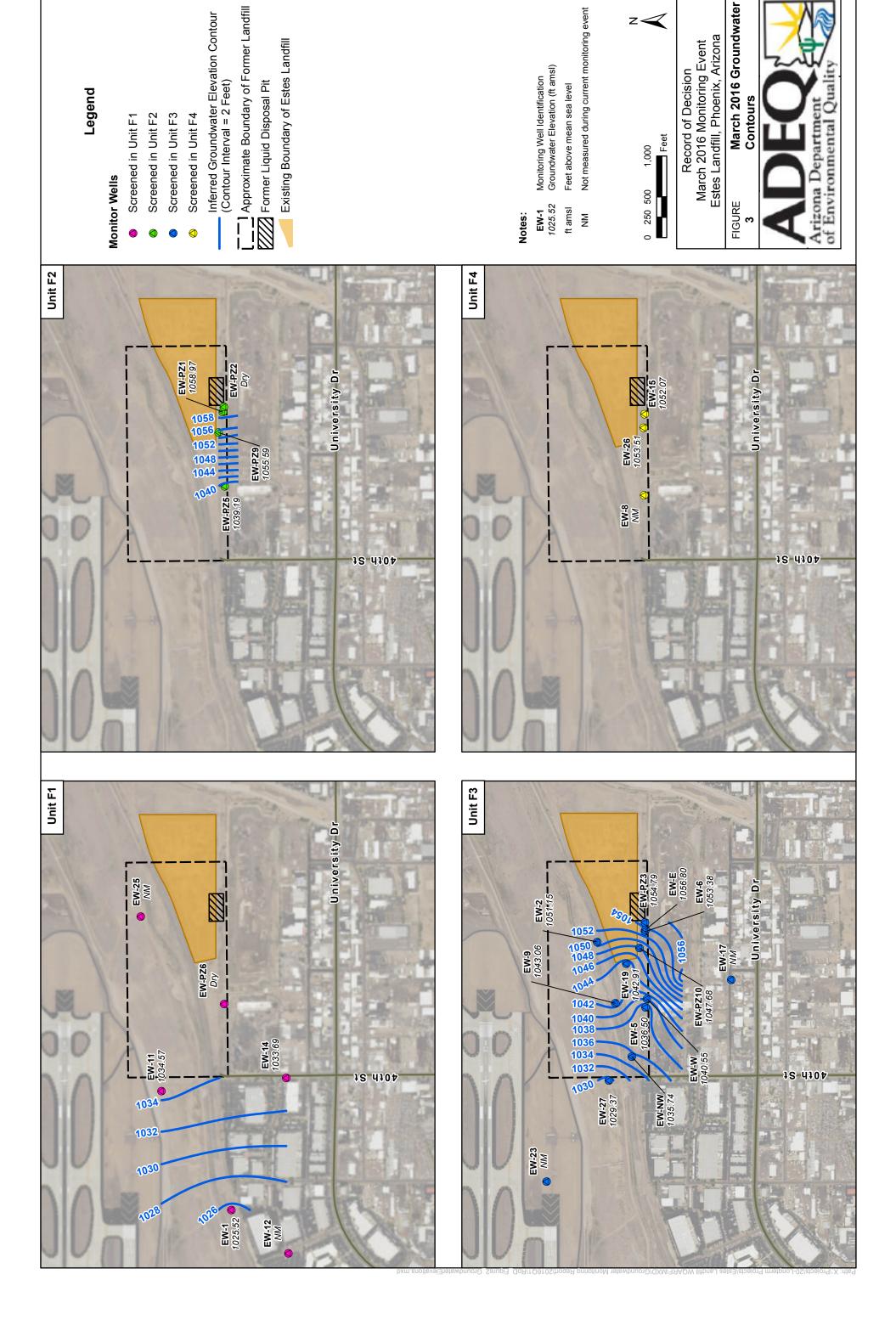


- Former Industrial Production Well
- Approximate Boundary of Former Landfill Existing Boundary of Estes Landfill

Record of Decision March 2016 Monitoring Event Estes Landfill, Phoenix, Arizona

March 2016 Lateral COC Extent

Arizona Department



# APPENDIX A

Responsiveness Summary
Pursuant to A.A.C. R18-16-410(B)(2) and
A.R.S. 49-287.04(F)

### **RESPONSIVENESS SUMMARY**

Per A.A.C. R18-16-410(B)(2) and A.R.S. 49-287.04(F), a comprehensive responsiveness summary was prepared by the Director regarding all comments received during the 90-day comment periods for the PRAP dated June 27, 2002 and the revised PRAP dated February 9, 2015. Comments received by ADEQ during both comment periods, along with any response to the comments issued by ADEQ, are included in Appendix A. Comments received during both comment periods and ADEQ responses to the comments are as follows:

#### 4.1 2002 PRAP

### Comments from the City of Phoenix dated February 5, 2003.

The COP broke their comments down as Specific Comments and Categorized Comments.

# A. Specific Comments

1) <u>COP:</u> Page 4, 1<sup>st</sup> Paragraph, 3<sup>rd</sup> Sentence: The term "municipal" should be deleted or changed as the Estes Landfill was not operated by a municipality. It was a privately owned landfill that accepted commercial and industrial waste.

### Response:

The change was incorporated into the Final PRAP for the site.

Comments 2) through 6) refer to statements made in the final Remedial Investigation (RI) Report, dated July 30, 1999, that were provided in the PRAP as background information.

2) <u>COP:</u> commented on whether further evaluation of potential risks due to leaching of metals to groundwater was conducted as recommended in the RI Final Report.

### Response:

Based on the relatively low levels of metals detected in the groundwater, it was determined that leaching to groundwater did not present a potential risk to human health and the environment.

3) <u>COP:</u> commented that the groundwater modeling effort did not account for the TCE plume south of the Estes Landfill site and that since this plume was not accounted for there is no assurance that the remedy will achieve the ROs within the modeled time frames.

### Response:

The proposed modeling effort was to demonstrate that the remedy will protect current and reasonably foreseeable groundwater uses from impact due to contamination emanating from the Estes Landfill. The remedy is not designed to protect groundwater uses from impact from other sources of contamination.

4) <u>COP:</u> commented that the modeling effort did not take into account the continued dissolution of contaminants into the groundwater from the F2 zone and that future river flows and subsequent reintroduction of contaminants were not taken into account.

### Response:

The biodegradation rates used in the modeling effort were based on actual concentration versus time data for the site from 1992 to 2000. Since the contaminant concentrations during this time period were influenced by continued dissolution from the F2 zone and river flow events, these factors were taken into account in determining if natural attenuation would meet the ROs.

5) <u>COP:</u> asked for an explanation of what offsite activities were identified during the RI and how they related to the observed contamination in the groundwater (page 7, 7<sup>th</sup> dash). The COP also commented that offsite contamination had to be considered when establishing cleanup goals.

### Response:

The RI determined that there was an offsite TCE contaminant plume that did not affect wells impacted by the Estes plume. Since the offsite contamination did not

originate on the Estes Landfill site and did not impact the Estes plume, it was not considered when establishing cleanup goals for the site.

6) <u>COP:</u> Regarding the 1<sup>st</sup> bullet on page 8, the COP stated that this paragraph discusses methane and indicates that methods to recover methane in landfills should be evaluated during the FS. The COP believes that an evaluation of methane control systems should be conducted and included in the PRAP.

### Response:

Methane recovery at the landfill was not evaluated because the remedies evaluated in the feasibility study did not involve the placement of an engineering control that would cause the accumulation of methane gas at the site.

7) <u>COP:</u> Regarding the 3<sup>rd</sup> bullet on page 8, the COP commented on ADEQ's statement that in accordance with the Draft WQARF Remedy Rules, source control must be considered for all remedies except the monitoring and no action alternative. The COP states that the use of the term "Source Control" for the proposed remedy is misleading because it implies that the remedy has an element of source control. The only difference between the proposed "Source Control" remedy and the less aggressive Monitoring remedy in the PRAP is that the Source Control remedy has storm water run-off controls. Storm water controls have nothing to do with source control. Please change this terminology to something more appropriate for the proposed action. Or if source control is really being considered, include a description of the proposed source control action in the remedy.

# Response:

In the original PRAP dated June 2002, the source control in the proposed remedy involved adding fill to the existing landfill soil cover to cover eroded areas with clean fill and a plan to prevent any future erosion of the landfill soil cover which could include the construction of a drainage system to properly convey surface water run-off from the landfill soil cover. By closing a potential exposure pathway to remaining subsurface contaminants, the proposed remedy was intended to

provide source control. However, the source of the groundwater impact is the former liquid waste disposal pit and not the current landfill. Considering that the current landfill is not contributing to groundwater contamination, ADEQ agrees that modifications to the landfill including soil cover modifications or storm water controls do not represent source control. Please note that the proposed remedy in this revised PRAP is limited to natural attenuation and monitoring.

8) <u>COP:</u> With regard to the RO for the use of the Bradley Well, the COP states that "there are no provisions in the proposed groundwater monitoring plan (see Section 7.1.5 of the PRAP) to sample the Bradley production well. Also, there are no provisions for possible alternative uses of the well. Therefore, there is no mechanism in place to determine if or when the Bradley Well could or could not be used. The PRAP needs to address how the Bradley Well RO will be achieved."

### Response:

The Bradley Well was abandoned in 2013.

9) <u>COP:</u> stated that all of the proposed remedial alternatives referenced, institutional controls and that comments regarding institutional controls would be addressed in the Categorized Comments Section which follows.

### **B.** Categorized Comments

### **Landfill Soil Cover**

COP: Regarding the section of the PRAP that summarized the feasibility study results, the COP had questions regarding the use of a vegetative cover as opposed to an armored cover (more aggressive alternative evaluated). Specifically, the COP stated that there were no provisions for maintenance of the vegetation or for methane control. The COP also commented that the State should set aside money now as a contingency to fund an engineered cap in the future (page 16, Alternative A.1).

# Response:

Since ADEQ did not select a remedy proposing erosion protection of the landfill soil cover using vegetation or engineering controls, there was no reason to provide these specifics in the PRAP. Additionally, since the source of the groundwater impact is the former liquid waste disposal pit and the current landfill is not contributing to groundwater contamination, the proposed remedy presented in the revised PRAP no longer includes soil cover modifications.

2) <u>COP:</u> had questions regarding the proposed storm water run-off control system (page 18, Section 7.1.1).

### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

3) <u>COP:</u> had concerns that the proposed remedy had no provisions for methane control or monitoring. The COP acknowledged that methane control may not be necessary since the proposed remedy does not envision a low-permeability engineered cover. The COP however states, that if the site is redeveloped, methane control may be required (page 18, Section 7.1.1).

### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

4) <u>COP:</u> There is no discussion of a 12-foot high fence in the FS or in the PRAP with the exception of a line item in the costing tables (page 18, Section 7.1.1).

### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

5) <u>COP:</u> Construction of the outfall for the drainage system in the Salt River will require a Section 404 permit from the Corps of Engineers (COE) as well as a NPDES permit. There are no provisions mentioned for 404, 401, or 402 permitting (page 26, Section 7.3).

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

6) <u>COP</u>: The report indicates that, based on visual observation, it was assumed that five acres would require an average of one foot of fill material for a total of approximately 8,070 cubic yards of material. It was also assumed that no major grading would be required. During the RI, a detailed surface contour map (one-foot contour intervals) of the Site was generated and submitted to ADEQ. A review of this map suggests that significantly more fill would be required than the amount estimated, particularly if a perimeter swale system is installed. The existing contour information should be used to refine the estimate of fill material required. Also, it was assumed that sedimentation ponds would not be necessary prior to discharge of storm water into the Salt River. Justification for this assumption should be provided (page 26, Section 7.3).

# Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy. 7) <u>COP</u>: The City agrees that natural attenuation of organic compounds is occurring at the site. However, we have concerns about how the modeling was performed to support the claim that natural attenuation will reduce contaminant concentrations to below AWQS by 2020. We believe that the predictive analyses are overly optimistic and that natural attenuation alone cannot achieve AWQS by a stated time frame (page 26, Section 7.3).

#### Response:

ADEQ tends to agree with this concern. However, current trends appear to support the model. A 15 year monitoring program is included in the proposed remedy.

8) <u>COP:</u> The primary concerns identified in the modeling report are: 1) the modeling approach does not include a continuing source of contamination from F2; 2) the use of a single biodegradation rate for soil and water for each COC, both onsite and offsite, is inappropriate given the different degradation mechanisms; 3) the model does not account for two different sources of groundwater contamination (onsite F2 source and offsite TCE source); 4) the model ignores potential impacts of flow in the Salt River; 5) the model does not account for the continuing dissolution of contaminants from F2 into F1 and F3 at the source area; and 6) the model simulates flow in Unit F1 when the unit is dry.

#### Response:

Although the COP states their basis for believing that the groundwater modeling used in the PRAP is overly optimistic, it appears to be a moot point in light of information submitted by the City of Phoenix to ADEQ in a letter dated June 17, 2002. Enclosed with the letter was a report prepared by Carollo Engineers, dated April 2002, entitled "Groundwater Utilization Tools User's Guide". The COP letter stated that the purpose of the report was to identify square mile areas of central Phoenix that are unavailable or undesirable for well siting, and also to identify those areas that have the most favorable conditions for groundwater production. The COP letter states that [a] score of 75 points or greater indicates favorable well siting conditions within the square mile area. The letter goes on to erroneously state that

"interestingly, some of the highest scores are in the square miles containing and closest to the Estes Landfill."

The Carollo report states that "....areas with score in at least the 75<sup>th</sup> percentile may warrant consideration for future well development for drought protection". The two square miles within which the Estes Landfill is contained received scores of 58 and 63, respectively. The closest areas with a score at or above the 75<sup>th</sup> percentile are almost two miles to the west and southwest of the Site. Since the extent of groundwater contamination resulting from the Site has already been defined in these directions to below AWQSs for the COCs and historical data indicates that the Site groundwater contamination plume is not expanding, the RO for protecting the future use of groundwater by the COP by the year 2020 has already been met. Revisions to the groundwater model are not necessary at this time.

Regarding the COP's comments on a continuing source of contamination, the model was calibrated to match historic data and this accounted for loading of contaminants from the F2 zone following flood events and any continual leaching of contaminants over time.

With respect to the comment that the model ignored residual concentrations of TCE detected in onsite wells, since the TCE plume is small and localized on-site, modeling of the TCE plume is not needed to determine that the TCE plume will not migrate off-site and impact potential receptors. The residual TCE will produce daughter products cis-1,2-DCE and VC; however, this was accounted for as the degradation rates were based on real data which accounted for the production of daughter products over time.

In response to the COP's comment on the offsite source of TCE groundwater contamination, there is a clear delineation between the Site groundwater contamination and the TCE plume to the south of the Site. These two plumes are not co-mingled. Therefore, the proposed remedy for the site has been designed to address only contamination emanating from the Site.

#### **Institutional Controls and Land Use Impacts**

9) <u>COP:</u> Several sections of the PRAP address institutional controls, engineering controls, and land use implications of the proposed remedy. The PRAP is not entirely consistent in how it addresses these issues, nor does it provide sufficient information on exactly what ADEQ proposes. Long-term maintenance of the remedy is not addressed. Due to lack of information, the City cannot comment on whether the cost estimates are accurate, nor can feasibility be determined. Moreover, ADEQ's proposals generate significant legal issues, as discussed below.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

10) <u>COP:</u> Page 27, Section 8.1 states that the existing landfill soil cover has been "excellent in providing a physical barrier preventing public exposure to hazardous substances." The City agrees.

However, Section 7.1.1 on page 18 states that some areas of the existing landfill soil cover have eroded and need to be modified. Details are not provided on the nature of necessary modifications. The PRAP provides that ADEQ will at least place new fill dirt on some areas and construct a perimeter storm water drainage system. Currently there is no storm water runoff from the site, as all storm water collects in retention areas.

# Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy. 11) <u>COP</u>: The proposed storm water discharge may require a NPDES permit. ADEQ has not addressed who will apply for and receive the permit, if one is required, how the permit procurement will be funded, who will obtain permit renewals, and who is responsible for complying with the requirements in the permit, including monitoring and reporting. If a permit is not required, ADEQ still needs to address how it will comply with the substantive requirements of the NPDES program.

In addition, as stated in the PRAP, with the exception of several eroded areas, the existing landfill soil cover has provided an adequate barrier to hazardous waste over the past 20 years and therefore, features such as armoring or clay layers are not required. Due to COP concerns, the proposed remedy will no longer propose a storm water drainage system, but will propose storm water run-off control.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

12) <u>COP</u>: Section 7.1.4, page 2, provides for an operations and maintenance plan to deal with long-term maintenance of storm water run-off controls and landfill soil cover. There is no information in the PRAP as to what this would involve, how much it would cost and who would pay the cost. Section 7.1.2 notes that institutional controls will have to be developed. No details are provided and responsibility for the costs and maintenance of the controls is not discussed. ADEQ suggests that a recorded deed restriction will be necessary. The statutes are not clear that a deed restriction can be required of a landowner, especially where the landowner does not select the remedy.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

### **Monitoring**

13) <u>COP:</u> commented on the proposed groundwater monitoring and sampling program.

# Response:

ADEQ has modified the sampling program in this revised PRAP in light of COP's comments, as well as those of others. The revisions are outlined in Section 7.1.1. The revised well list includes 20 monitoring wells as follows:

A 15-year groundwater monitoring program will be established for the Site. Groundwater samples will be collected from the following 20 monitoring wells:

- Wells Screened Within Unit F1: EW-1, EW-14, and EW-PZ-6
- Wells Screened Within Unit F2: EW-PZ1, EW-PZ2, EW-PZ5, and EW-PZ9
- Wells Screened Within Unit F3: EW-5, EW-6, EW-9, EW-19, EW-27, EW-NW, EW-E, EW-W, EW-PZ3, and EW-PZ10
- Wells Screened Within Unit F4: EW-8, EW-15, and EW-26
- 14) <u>COP:</u> commented on the lack of a necessity for additional biodegradation screening since it has already been established that biodegradation is occurring at the site (page 22, 2nd Paragraph).

#### Response:

ADEQ concurs with the COP comments and the proposed biodegradation screening is not included in the revised PRAP.

15) <u>COP:</u> The remedy includes Five-Year Reviews and says that time versus concentration trends associated with VOCs must be included. Target concentrations for each COC must be established at each monitoring location to determine the effectiveness of the remedy during each Five-Year Review. This must include wells impacted by the offsite TCE plume to ensure the groundwater is usable by 2020. Additionally, how and when will achievement of the groundwater ROs be determined (e.g., what would be considered acceptable

concentrations in which wells for how long)? Five Year Reviews should be coordinated with the City (for land and water use plans) as well as with ADWR (for groundwater use surveys).

# Response:

Target groundwater concentrations are the AWQS for each COC. As long as COC concentration trends are approaching AWQS the remedy will be applied. A monitoring well network is established in this ROD as specified above.

As stated earlier, the groundwater ROs have already been achieved since the extent of groundwater contamination emanating from the Site has been defined to below AWQSs to the south and the west and do not impact areas where the COP may potentially install drinking water wells.

Periodic reviews will be used to verify that these conditions have not changed and allow an opportunity to amend the remedial action if prudent.

Regarding the offsite TCE plume to the South, as stated earlier, this contaminant plume is not commingled with the Site plume. Therefore, wells impacted by the offsite TCE plume will not necessarily be included in the sampling and monitoring plan.

#### **Contingency Plan**

16) <u>COP:</u> comments that the PRAP needs to include a contingency plan in the advent that the ROs will not be met through natural attenuation.

#### Response:

Periodic reviews will be used to verify that these conditions have not changed and allow an opportunity to amend the remedial action if prudent.

The COP also states that there is no mention of the southern TCE plume that impacts wells already impacted by the Estes plume, and this separate plume was not accounted for in the modeling used to predict achievement of the ROs. Since TCE exceeds AWQS in offsite wells impacted by Estes, how will the ROs be satisfied if monitoring indicates that

groundwater cannot be used in 2020 because of TCE? The remedy needs to ensure that the aquifer near the Estes Landfill will be suitable for a municipal supply well by 2020 or sooner. The remedy or contingency plan also needs to take into account the effects of pumping a large supply well on whatever plume is left.

#### Response:

The offsite TCE plume has not impacted wells already impacted by the Site plume, therefore it was not accounted for in the modeling effort. The PRAP addresses achievement of ROs for the Site plume not the offsite TCE plume. Additionally, TCE has not been detected above the AWQS of  $5.0~\mu g/L$  in any samples collected from site monitoring wells or piezometers since 2001. The remedy ensures that the aquifer near the Estes Landfill that is suitable for municipal water use (approximately two miles down-gradient) will not be impacted by the Estes plume. Therefore, the remedy already meets the ROs for this use by 2020.

18) <u>COP:</u> further comments that future use of the site could include paving, which may necessitate methane control and that a contingency plan for methane control should be included in the CAP.

#### Response:

It is not the responsibility of WQARF to control methane since the proposed remedy is not causing an accumulation of methane and methane is not a hazardous compound under WQARF. Any methane control for the landfill, if needed, is the responsibility of the property owner. COP has subsequently (in 2015) submitted updated information to ADEQ concluding that the requirements set forth by 40 C.F.R. 257.3-8 have apparently been met at the landfill.

#### **Costs**

19) COP: commented on the costs for the landfill soil cover being inadequate.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

20) <u>COP:</u> commented that the proposed costs for the Five Year Review & Reports were too low.

# Response:

The costs for the Five-Year Review (now called the Periodic Review) and Reports are based on actual costs incurred and the annual groundwater monitoring budget for monitoring at this site. Costs have been updated in this ROD relative to the PRAP.

21) <u>COP:</u> commented that the costs for fence maintenance are inadequate and do not include removal of wind-blown litter.

# Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

22) <u>COP:</u> questions the \$2,000 line item for filing of institutional controls.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

23) <u>COP:</u> stated that there did not appear to be costs associated with the filing of the DEUR, annual reporting, and review of redevelopment plans by ADEQ.

# Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

# 24) <u>COP:</u> commented on "contingency plan costs".

#### Response:

The revised PRAP no longer contains the contingency being commented on by COP.

# Comments from the City of Phoenix dated February 24, 2003

COP: commented that additional evaluation should be conducted to determine if landfill gas collection would be needed in the future if the site were redeveloped. The COP goes on to state that while the City understands that methane alone would not be considered a hazardous substance under the WQARF program, nonetheless the site data collected during the remedial investigation indicates that hazardous substances, including vinyl chloride and numerous Chemicals of Concern were present in the landfill gas. Special handling and treatment for these hazardous substances would need to be included in the design and operation of a methane gas collection system and should therefore, be included in the State's overall remedy for the site. The City suggests this consideration for treatment be included in the site remediation costs estimates. Later enactment of a gas treatment system during the redevelopment appears to present the most cost effective way to handle this issue. The future ROs set for the site fully support this remediation option.

#### Response:

As indicated in the revised PRAP and agreed to by COP, actions associated with the soil covered landfill are not the responsibility of WQARF, but the property owner, and are not included in the proposed remedy.

#### Batelle Comments on behalf of Honeywell dated November 21, 2002

Battelle: recommended the reduction in collection of natural attenuation (NA) indicator parameters by the elimination of analysis for the NA indicator parameters: carbon dioxide, total organic carbon, nitrite, total Kjeldahl nitrogen (TKN), chloride, sulfide, dissolved methane, ethane, ethene, and hydrogen. The reason given for eliminating these compounds are not conclusive and it may be impossible to make a determination of dechlorination conditions because of site conditions. Batelle made the argument that the remaining NA indicator parameters coupled with volatile organic compounds (VOCs) data should be sufficient to monitor NA conditions.

## Response:

ADEQ concurs with Battelle's comments and the referenced NA indicator parameters were eliminated from the PRAP monitoring plan.

Battelle: recommended the removal of the semi-volatile organic compound bis(2-ethylhexyl) phthalate from the PRAP monitoring program. The reasoning given was that this compound is detected sporadically and there is no consistency of concentration in groundwater samples collected from the same wells indicating contamination by contact with plastics during sampling or in the laboratory.

#### Response:

This compound has been removed from the PRAP monitoring program.

Battelle: recommended a reduction in the number of groundwater monitor wells sampled from 31 wells down to 15 wells and gives a rationale for the wells selected. Battelle also recommended that the sampling well network be re-evaluated annually and modified accordingly.

### Response:

ADEQ agrees that data collected from some of the monitor wells may not be necessary at this stage of the project but is in disagreement with the number of wells to be removed from the PRAP monitoring program. To meet the recommendation

by the EPA in the document titled Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Groundwater of collecting groundwater quality data from long term monitor wells and performance evaluation monitor wells, ADEQ recommends the following groundwater monitor wells be utilized for the collection of groundwater quality data:

- Wells Screened Within Unit F1: EW-1, EW-14, and EW-PZ-6;
- Wells Screened Within Unit F2: EW-PZ1, EW-PZ2, EW-PZ5, and EW-PZ9;
- Wells Screened Within Unit F3: EW-5, EW-6, EW-9, EW-19, EW-27,
   EW-NW, EW-E, EW-W, EW-PZ3, and EW-PZ10; and
- Wells Screened Within Unit F4: EW-8, EW-15, and EW-26.

This recommendation includes 20 wells, 11 less than proposed in the initial PRAP dated June 2002 and five more than proposed by Battelle.

4) <u>Battelle:</u> questioned the need for a contingency of nine additional monitoring events and a 20 percent (%) contingency.

#### Response:

The revised PRAP no longer contains the contingency being commented on by Battelle.

Battelle: recommended a reduction in the PRAP monitoring period of 30 years based on the current contaminant concentrations and the rate of biodegradation. Modeling of site data indicated that the maximum time frame for site remediation using monitored natural attenuation is to the year 2020.

#### Response:

ADEQ concurs with Battelle's comments and has reduced the monitoring period in the revised PRAP to match the 15 year time frame predicted in the groundwater modeling.

#### Comments from Laurie T. LaPat-Polasko dated February 24, 2003

Ms. LaPat-Polasko: "With respect to Section 6.0 Feasibility Study Results Summary, is it required for one of the alternatives to be the Most Aggressive Alternative available or can alternative A.1 simply be a more aggressive alternative then A.2?" Ms. LaPat-Polasko asked if the more aggressive remedy could have included an in-situ bioremediation approach to speed up the natural attenuation process.

# Response:

The Feasibility Study Results Summary listed proposed remedy A.1 as the "More Aggressive Alternative," not as the "Most Aggressive Alternative." Therefore, the in-situ bioremediation approach could have been evaluated. However, in light of information submitted by the COP regarding future groundwater uses in the Estes Landfill area, the need for enhanced bioremediation of the contaminant plume is not required to meet the ROs for the site. (Note: the information submitted by the COP was not included in the PRAP since it was submitted at approximately the same time the PRAP was released for public comment.)

2) <u>Ms. LaPat-Polasko:</u> further commented that there were more wells identified for the monitoring program than may be necessary to monitor natural attenuation conditions at the site.

#### Response:

ADEQ agrees with this comment and has modified the monitor well sampling network in the revised PRAP.

Ms. LaPat-Polasko: questioned if the groundwater at the site had ever been tested for volatile fatty acids or phospholipid fatty acid (PLFA) analysis. She further stated that the PLFA analysis is beneficial to understanding the health of the indigenous microbial population.

#### Response:

To ADEQ's knowledge, these analyses were not conducted on the groundwater at the site. However, there are no plans to monitor for this natural attenuation parameter in the future since there is sufficient historic evidence that natural attenuation is occurring at the site.

#### 4.2 2015 Revised PRAP

#### Comments from the City of Phoenix, May 1, 2015

1) <u>COP:</u> Section 1.1. bullet 3: As a point of clarification it should be noted that Estes Landfill, Air National Guard and Phoenix Sky Harbor International Airport are all Phoenix properties. Phoenix also has a 404 permit to maintain a portion of the Salt River area located between Estes and the Airport for the purposes of safety, wildlife management, and security per Federal Aviation Administration and Department of Homeland Security regulations.

#### Response

Thank you for the clarification on this point. ADEQ will make note of this for future reference.

2) <u>COP</u>: In the Site Background Section of the report there is discussion about methane concentrations at the landfill. Phoenix concurs with the report that site conditions do not exist that allows for the build-up of methane, therefore it is not an issue. The data regarding this discussion appears to be from 2008. In 2014, Phoenix hired Clear Creek to assess the methane at Estes Landfill. Enclosed is a copy of the report which contains this more current data for your reference.

### Response

Thank you for the updated information.

3) <u>COP:</u> Section 4.1 Monitoring Well Survey. Page 12. Bullet 5: The consultant noted issues trying to access EW-22, EW23 or ANG-02, which are on Phoenix- Aviation Department property. Although we do not disagree with the decision to remove these wells from the monitoring program, Phoenix wants to advise ADEQ that we are unaware of any attempt by the consultant to coordinate access to these wells for monitoring purposes.

# Response

Comment noted.

4) <u>COP:</u> Table 1. Page 19: Phoenix has enclosed with this response, a copy of our 2014 methane assessment of Estes Landfill and requests this current data be used in place of the 2008 methane data.

#### Response

Thank you for the updated information.

5) <u>COP:</u> Section 6.0. Page 23: Phoenix agrees that RO's for the Estes Landfill have changed and that the ADEQ WQARF Program is not responsible for soil cover maintenance, institution controls, and security. Phoenix further concurs with ADEQ that the PRAP for Estes should be monitored natural attenuation and groundwater monitoring.

#### Response

Thank you for your comment.

6) <u>COP:</u> Section 7.1 Page 23: As property owner, Phoenix requests copies of the analytical data for the next 15 years of monitoring or until clean up goals are achieved.

#### Response

ADEQ will share the monitoring reports with the COP.

7) <u>COP:</u> Section 7.1.1. Page 25, next to last paragraph: Phoenix suggests that ADEQ consider remaining flexible regarding the number of wells to be monitored. Phoenix anticipates that as the natural attenuation remedy progresses and the areal extent exhibiting the COCs decreases the number of wells required to be monitored can be likewise decreased over time.

# Response

ADEQ concurs, and has amended the relevant sections of the ROD to reflect this. Please note that 20 wells were still used in the cost estimates for the duration of the remedy, as it is difficult to predict the timing and number of monitoring wells falling out of the necessary monitoring network.

8) <u>COP:</u> Section 8.1. Page 28. 2nd Sentence: Same comment as on Page 23 in Section 6.0. ADEQ makes reference to a "landfill cap" throughout the document. The term "landfill cap" is commonly associated with the final cover system required for closure pursuant to 40 CFR 258. To prevent confusion of terminology Phoenix requests ADEQ to substitute the term "landfill cap" with "landfill soil cover" as our records do not demonstrate that an engineered final cover system was installed at the Estes Landfill.

# Response

ADEQ concurs, and has corrected this language for the ROD.

9) <u>COP:</u> ADEQ makes reference to "the former liquid waste disposal pit is also no longer covered by the current capped landfill" in several places in the report. Phoenix didn't remove soil cover from this area - so the area of the former liquid waste disposal pit was left as is. Phoenix requests this text be reworded to clarify that no changes of this area have occurred at the site since 2002.

#### Response

Thank you for the clarification on this point. No such language appears in the ROD.

# Comments from the City of Scottsdale, dated May 4, 2015

1) <u>COS:</u> provided comments regarding the theory of liability, allocation scheme and PRP status.

# Response:

Thank you for your comments. ADEQ's response is documented in the letter dated August 6, 2015 and included in Appendix C of this ROD. In addition to the comments within the aforementioned letter, a final analysis of the evidence in ADEQ's possession is not yet complete.

2) <u>COS:</u> provided comment asserting that COS in not an "arranger" as defined in A.R.S. 49-283(A)(2).

# Response:

Thank you for your comment.

3) <u>COS:</u> provided comments regarding COS's involvement in treatment and monitoring of groundwater contamination local to the COS.

# Response:

Thank you for your comment.

4) <u>COS:</u> provided comments regarding availability of ADEQ records for review:

#### Response:

Thank you for your comments. ADEQ's response is documented in the letter to COS dated August 6, 2015 and included in Appendix C of this ROD.

Comments from Gammage & Burnham on behalf of former Arizona Service Company, dated May 4, 2015

<u>G&B</u>: states that Arizona Service Company ceased to exist as of November 3, 1965. The records show that the company was dissolved under corporate resolution. G&B have not identified any living principals, or any evidence that there are any remaining shareholders.

#### Response:

Thank you for your comment.

Comments from Jorden Bicchoff & Hiser on behalf of the John W. and Virginia L. Lattimore, dated April 29, 2015

<u>JB&H:</u> states that Mr. Lattimore and Mrs. Lattimore are both deceased, and neither descendants carry liability for response costs nor does ADEQ have claim against any estate left to descendants.

# Response:

Thank you for your comment.

Comments from Mark W. Estes, on behalf of Phillip G. Estes and Edward S. Estes, May 4, 2015, and follow up comment, June 1, 2015

<u>Mark W Estes:</u> states that neither Phillip G., Edward S. nor Mark W. Estes had "outright possession" of the Estes Landfill and refutes their inclusion as PRPs.

#### Response:

Thank you for your comments.

#### Comments from Microsemi, dated April 30, 2015

<u>Microsemi</u>: states that Microsemi is not a successor to, has no association with, nor is responsible for any liability for Dickson Electronics Corporation. Microsemi recommends adding Dickson Electronics Corporation to the list of PRPs for the Site.

## Response:

Thank you for your comments.

# Comments from Della M. Bradley, on behalf of James F. (Pete) Ellis, dated April 13, 2015

<u>Della M. Bradley</u>: states that James F. (Pete) Ellis died on January 20, 2012. Ms. Bradley confirms that James F. (Pete) Ellis was the owner of Pete's Septic Tank Service; however the business was sold "many years ago" and she has no knowledge or involvement of the Estes Landfill site nor information regarding the sale.

#### Response:

Thank you for your comments.

# Comments from Timmery Fitzpatrick on behalf of Safety-Kleen, May 4, 2015

1) <u>Safety-Kleen:</u> comments that Safety-Kleen has not found records indicating disposal of Safety-Kleen 105 solvent at the Site, and that the solvent is not typically disposed of at landfill sites.

#### Response:

Thank you for your comments.

2) <u>Safety-Kleen:</u> comments that Safety-Kleen 105 Solvent does not contains PCBs as indicated by Attachment A of the Notice Letter Pursuant to A.R.S. 49-287.04 dated April 2, 2015 and that no allocation is proposed for PCBs.

#### Response:

Attachment A contained a typographical error. The letter should have stated that Safety-Kleen Solvent 105 contained PCE (not PCB).

3) <u>Safety-Kleen:</u> requests clarification of proposed allocation for arrangers in regards to classification by size.

# Response:

Size is referring to contaminant quantity disposed of at the Site, not the size of the entity classified as an Arranger.

4) <u>Safety-Kleen:</u> requests copies of records substantiating disposal of Safety-Kleen 105 Solvent at the Site.

# Response:

Review of public records kept by ADEQ may be requested by mail at:

ADEQ Records Center Attn: Cina Sheffield 1110 West Washington Street Phoenix, Arizona 85007

Or by email at <u>recordscenter@azdeq.gov</u>. Assistance from a records center representative may be acquired by phone at (602) 771-4380.

# Comments from Kelly E. Richardson on behalf of Siemens, August 17, 2016

1) Siemens: proposed an alternate method of allocating liability.

#### Response:

Thank you for your proposal. ADEQ has evaluated your comment and the final allocation method is as follows:

Arrangers	42%
Operators	23%
Transporters	20%
Owners	15%
Total	100%

2) <u>Siemens:</u> commented that they lacked knowledge of others that may be liable under this investigation because they have not reviewed any records relating other PRPs, and therefore have been unable to develop an understanding of the alleged bases of liability for other PRPs.

# Response:

Thank you for your comment.

3) <u>Siemens:</u> commented that the Site should have a vastly larger number of arrangers than listed in the Notice Letter and asserted that they will reserve their right to present information regarding liability of others until after they have had an opportunity to review relevant documents.

#### Response:

Thank you for your comment.

## Comments from Kelly E. Richardson on behalf of Siemens, February 20, 2017

1) <u>Siemens:</u> generally agrees with the final allocation approach, but reserves the right to contest allocation details and liability. Additionally, Siemens indicates that City of Scottsdale qualifies as an arranger.

#### Response:

Thank you for your comments.

#### Comments from Janice L. Bladine on behalf of City of Scottsdale, February 22, 2017

1) <u>COS:</u> refutes their identification as an arranger, indicates that the State should allocate responsibility to other parties, and states that no documents supporting the City's classification as an arranger have been provided to the City.

#### Response:

Thank you for your comments.

# **APPENDIX B**

Written Responses to Notice Letters Pursuant to A.R.S. § 49-287.04



OFFICE OF ENVIRONMENTAL PROGRAMS

February 5, 2003

Mr. Jerry Smit Responsible Party Search Manager Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007

Comments to Proposed Remedial Action Plan Estes Landfill WQARF Registry Site Phoenix, Arizona

Dear Jerry:

In response to your June 2002 letter regarding the Estes Landfill WQARF Registry Site, the City of Phoenix has prepared this letter to provide comments on the Final Proposed Remedial Action Plan, ADEQ Estes Landfill WQARF Site, Phoenix, Arizona dated June 27, 2002.

The purpose of the Proposed Remedial Action Plan (PRAP) is to inform the public and potentially responsible parties (PRPs) of the proposed remedy for the Estes Landfill WQARF Site (the "Site") selected during the feasibility study (FS) process. The PRAP, prepared by Harding ESE for the Arizona Department of Environmental Quality (ADEQ), describes the Site, the results of the remedial investigation (RI) and the FS, and summarizes the proposed remedy and estimated costs. The PRAP also describes how the proposed remedy attempts to meet remedial objectives (ROs) established for soil, water and air that were previously established by ADEQ.

The PRAP is based on two documents also prepared by Harding ESE for ADEQ. These include:

- > Revised Final Groundwater Modeling Report, Estes Landfill WQARF Registry Site, Phoenix, Arizona. Dated June 19, 2002.
- > Final Feasibility Study Report, ADEQ Estes Landfill WQARF Site RI/FS, Phoenix, Arizona. Dated July 3, 2002.

We have attempted to group our comments into major categories where similar themes were noted. Because the PRAP is based on the results of the FS and modeling reports, comments to those documents directly affect information provided in the PRAP and are also provided.

The ROs established for the Estes Landfill consist of industrial, commercial, and recreational future land and water uses. Remedial objectives for vapor/air were not established based on the results of the updated Risk Assessment that indicated that existing and future concentrations did not pose an unacceptable health risk.

Future water uses used in the ROs were set by anticipated future groundwater needs of the City of Phoenix. Those needs established a required timeframe of 2020 for groundwater to meet aquifer water quality standards (AWQS). The need for potable groundwater in the vicinity of Estes by 2020 was a projection based on past uses and anticipated growth. If drought conditions persist, the resource may be required sooner than projected. The water use ROs do not take into consideration new wells that could be installed by adjacent landowners. Groundwater uses also assumed continued use of the Bradley well for dust control, which may not be the use in the future.

Mr. Jerry Smit Arizona Department of Environmental Quality Page 2 February 5, 2003

To meet the Land Use ROs, the State's proposed remedy calls for modification of the existing cap to include storm water run-off controls, institutional controls that prevent any developer from altering the integrity of the cap, natural attenuation, and monitoring. We do not believe that the land use ROs will be achieved by the proposed remedy. Further, the proposed cap detracts from future uses of the property.

Our comments on the three reports are attached. They begin with specific comments on the Site Background and Current Conditions Sections of the PRAP (Attachment 1). Our PRAP comments are then grouped into six categories listed below.

- 1. Landfill Cap
- 2. Natural Attenuation
- 3. Institutional Controls
- 4. Monitoring
- 5. Contingency Plan
- 6. Costs

These are followed by comments on the groundwater modeling report (Attachment 2) and the final feasibility study report (Attachment 3).

As demonstrated by the attached comments, the City is seriously concerned that the proposed natural attenuation remedy will not meet AWQS within the established timeframes. Our primary basis for this opinion relates to the modeling effort which, among other things, does not include a continuing source of contamination from the F2 source area. Because of this, the City believes that a Contingency Plan acceptable to the City must be developed and funding for implementation set aside now. The City and State are custodians of the water supply for the public and must ensure that the resource will be available when needed.

The City of Phoenix appreciates this opportunity to provide comments to ADEQ on the proposed remedy for the Estes Landfill. If you have any questions, please call the undersigned.

Sincerely,

Karen O'Regan

Environmental Programs Manager

Attachments

cc: Cynthia Parker

Craig Reece

Carlos Padilla

Tom Buschatzke

Steve Rossi

Donn Stoltzfus

Karen Peters

Don Hanson

# ATTACHMENT 1

# Comments To Final Proposed Remedial Action Plan ADEQ Estes Landfill WQARF Site Phoenix, Arizona

# A. Specific Comments

Comment 1) Page 4, 1st Paragraph, 3rd Sentence: The term "municipal" should be deleted or changed as the Estes Landfill was not operated by a municipality. It was a privately owned landfill that accepted commercial and industrial waste.

Comment 2) Page 6, 2<sup>nd</sup> Paragraph, 1<sup>st</sup> Bullet: The last sentence indicates that further evaluation of potential risks to human health and the environment from leaching of metals to groundwater was recommended. Was this evaluation ever completed? If not, why not? If so, what controls

Comment 3) Pages 6 & 7, 2<sup>nd</sup> Bullet, 1<sup>st</sup> & 2<sup>nd</sup> Dashes: The RI confirmed the presence of two VOC plumes, a vinyl chloride plume emanating from the Estes Landfill, and another one emanating from an unknown TCE source south of University Drive. However, the contaminant transport modeling conducted for the Site only illustrates one plume emanating from Estes that extends south of University Drive, which is incorrect. Because the existing site conditions, in particular the offsite TCE plume, were not replicated in the model, the model cannot accurately simulate future conditions. Further, since the second plume was not considered, there is no assurance that the remedy will achieve the groundwater ROs within the modeled timeframes.

Comment 4) Page 7, 5<sup>th</sup> Dash: The two primary mechanisms controlling the attenuation of VOCs at the Site are physical and biological. The main physical attenuation mechanisms are dissolution and advection. The paragraph goes on to discuss the presence of a source area in F2 and how the physical parameters control the migration of contaminants from the source area. It also discusses the impacts of flows in the Salt River on contaminant transport. The modeling approach used to estimate the timeframes for natural attenuation of VOCs does not include the continuing dissolution of VOCs into groundwater from F2, which seems to be counterintuitive, given that an F2 source is described in the RI. Additionally, the predictive modeling does not account for future river flows and the reintroduction of chemicals of concern (COCs) from onsite or offsite sources. Offsite contamination is known to exist, although the sources have not been identified. Therefore, the predictive simulations are overly optimistic with respect to timeframes needed to achieve aquifer water quality standards. If a continuing F2 source or offsite sources were included in the simulations, the timeframes for cleanup would be much longer. To properly aluate whether the proposed alternative will meet the ROs, ADEQ must consider the

continuing dissolution of VOCs into groundwater from the F2 source area when determining if bioremediation will meet the RO timeframes.

Comment 5) Page 7, 7<sup>th</sup> Dash: The report indicates that a general statistical analysis of the groundwater data was conducted to facilitate the identification of specific chemical compounds in the groundwater that were the result of onsite and offsite activities. Please explain what "offsite activities" were identified and how they relate to the observed contamination. If the water is to be usable by 2020, offsite contamination must be considered when establishing cleanup goals.

Comment 6) Page 8, 1<sup>st</sup> Bullet: This paragraph discusses methane and indicates that methods to recover methane in landfills should be evaluated during the performance of the FS. Our review indicates that this evaluation was not included in the FS. We believe that an evaluation of methane control systems should be conducted and included in the PRAP.

Comment 7) Page 8, 3<sup>rd</sup> Bullet: This section refers to changes or modifications that needed to be incorporated into the FS remedy selection process as a result of an evaluation of the COP Rio Salado Project, Assured Water Plan, and Draft WQARF Remedy Selection Rules (draft Rules). It indicates that "source control" must be considered for all remedies except monitoring and no action strategies. However, the use of the term "Source Control" for the proposed remedy is misleading because it implies that the remedy has an element of source control. The only difference between the proposed "Source Control" remedy and the less aggressive "Monitoring" remedy in the PRAP is that the Source Control remedy has storm water run-off controls. Storm water controls have nothing to do with source control. Please change this terminology to something more appropriate for the proposed action. Or, if source control is really being considered, include a description of the proposed source control action in the remedy.

Comment 8) Page 15, 1<sup>st</sup> Bullet: The RO for the current use of the Bradley Well for dust control is to protect, replace or otherwise provide alternative water supply should use of the Bradley Well be lost in the future due to change in the concentration of contaminants. This action would be needed at the time when the level of contamination in the Bradley Well coming from the Estes landfill plume prohibits its intended use, and would continue as long as the Bradley Well is in use and/or contaminant concentrations prohibit its intended use. However, there are no provisions in the proposed groundwater monitoring plan (see Section 7.1.5 of the PRAP) to sample the Bradley production well. Also, there are no provisions for possible alternative uses of the well. Therefore, there is no mechanism in place to determine if or when the Bradley Well could or could not be used. The PRAP needs to address how the Bradley Well RO will be achieved.

Comment 9) Page 16, Alternatives: All alternatives mention institutional controls, both for groundwater and the cap. Comments on the use of institutional controls are discussed in more detail in Attachment B.

# B. Categorized Comments

# Tandfill Cap

Comment 1) Page 16, Alternative A.1: While not discussed in detail in the PRAP, there are questions regarding the use of a vegetative cover as opposed to an armored cover. There are no

provisions for maintenance of the vegetation or for a methane control system (that would be required with an engineered cover of the type described). If an engineered cap is envisioned in the future, the State should set aside money now as a contingency to fund a cap in the future.

Comment 2) Page 18, Section 7.1.1: The description of the proposed storm water run-off controls is too limited and needs expansion. The phrase perimeter storm water (or drainage) run-off control system is used; however, it is unclear whether this system would be placed around the entire landfill or only around the relocated portion of the landfill. Based on a length of 8,000 feet used for costing purposes, it appears that the intent is to construct the drainage system around the entire landfill. Currently, the site is graded for internal drainage (i.e., bowl shaped). For a perimeter swale to operate properly, significantly more fill material and grading would be required than is currently proposed to have water flow to the perimeter. An engineering evaluation of the proposed cap should be conducted which addresses storm water drainage, methane gas management, and cap material selection and quantity. Further, an evaluation of storm water drainage from the Bradley Landfill onto Estes should be completed.

Comment 3) Page 18, Section 7.1.1: The proposed remedy has no provisions for methane control or methane monitoring. While previous monitoring has not indicated the presence of elevated concentrations of methane away from the landfill, elevated concentrations do exist beneath portions of the landfill. Since the proposed remedy does not envision a low permeability engineered cover, methane control may not be necessary. Nonetheless, a routine monitoring program should be considered as there may be pedestrian access. Also, if the site is redeveloped, methane control may be required.

Comment 4) Page 18, Section 7.1.1: There is no discussion of a 12-foot high fence in the FS or in the PRAP with the exception of a line item in the costing tables. A fence is an engineering control that is part of the remedy and must be discussed. Issues related to a 12-foot high fence include whether its height would comply with the City's Developmental Services Department (DSD) requirements and FAA limitations.

Comment 5) Page 26, Section 7.3: Construction of the outfall for the drainage system in the Salt River will require a Section 404 Permit for the Corps of Engineers (COE) as well as a NPDES permit. There are no provisions mentioned for 404, 401, or 402 permitting.

Comment 6) Page 26, 2<sup>nd</sup> Paragraph: The report indicates that, based on visual observation, it was assumed that five acres would require an average of one foot of fill material for a total of approximately 8,070 cubic yards of material. It was also assumed that no major grading would be required. During the RI, a detailed surface contour map (one-foot contour intervals) of the Site was generated and submitted to ADEQ. A review of this map suggests that significantly more fill would be required than is estimated, particularly if a perimeter swale system is installed. The existing contour information should be used to refine the estimate of fill material required. Also, it was assumed that sedimentation ponds would not be necessary prior to discharge of the storm water into the Salt River. Justification for this assumption should be provided.

# Natural Attenuation

Comment 7) Page 20, Section 7.1.3.1: The City agrees that natural attenuation of organic compounds is occurring at the site. However, we have concerns about how the modeling was performed to support the claim that natural attenuation will reduce contaminant concentrations to below AWQS by 2020. We believe that the predictive analyses are overly optimistic and that natural attenuation alone cannot achieve AWQS by the stated timeframe.

In general, we believe that the model significantly underestimates the timeframes required for natural attenuation to reduce chemical concentrations of DCE and VC to below the ADEQ AWQS of 70 and 2 ug/l, respectively. This opinion is based on: the approach used (attenuation of existing groundwater contamination with no continuing source), variables that affect degradation rates and future concentrations (such as degradation mechanisms, presence of electron donors/acceptors, etc.), and the overall model calibration. Due to the technical difficulty of source control, additional remedial actions need to be considered.

The model also ignores residual concentrations of TCE detected in onsite wells that, while localized, are nonetheless still present above AWQS. The data presented on Figure 15 of the modeling report show that measured concentrations of TCE and DCE in 1990 and 2000 are nearly identical, indicating little reduction in mass over the past 10 years. Since we have seen little reduction in the concentrations of TCE and DCE over the past 10 years, it is likely that VC will continue to be produced as a daughter product well beyond the estimated remedial timeframes.

It is also important to note that rates of remediation, regardless of the method used, tend to decrease with declining concentrations. It is unlikely that natural attenuation will be any different. This is particularly important with VC since its MCL is very low at 2 ug/l.

The primary concerns identified in the modeling report are: 1) The modeling approach does not include a continuing source of contamination from F2; 2) The use of a single biodegradation rate for soil and water for each COC, both onsite and offsite, is inappropriate given the different degradation mechanisms; 3) The model does not account for two different sources of groundwater contamination (onsite F2 source and offsite TCE source); 4) The model ignores potential impacts of flow in the Salt River; 5) The model does not account for the continuing dissolution of contaminants from F2 into F1 and F3 at the source area; and 6) The model simulates flow in unit F1 when the unit is dry. Detailed comments are provided in Attachment 2.

# Institutional Controls and Land Use Impacts

Comment 8): Several sections of the PRAP address institutional controls, engineering controls, and land use implications of the proposed remedy. The PRAP is not entirely consistent in how it addresses these issues, nor does it provide sufficient information on exactly what ADEQ proposes. Long-term maintenance of the remedy is not addressed. Due to lack of information, the City cannot comment on whether the cost estimates are accurate, nor can feasibility be determined. Moreover, ADEQ's proposals generate significant legal issues, as discussed below.

Section 8.1, page 27, states that the existing cap has been "excellent" in providing a "physical barrier preventing public exposure to hazardous substances." The City agrees. However, section 7.1.1 on page 18 states that some areas of the existing cap have eroded and need to be modified. Details are not provided on the nature of the necessary modifications. The PRAP provides that ADEQ will at least place new fill dirt on some areas and construct a perimeter storm water drainage system. Currently, there is no storm water runoff from the site, as all storm water collects in retention areas onsite.

The PRAP also states that surface soils are contaminated and measures need to be taken to "ensure that hazardous substances in subsurface soil do not become exposed or discharged to the Salt River." ADEQ will be the cause of any discharges of contaminated soil to the river by reconfiguring the drainage pattern at the landfill. Remarkably, the proposed remedy does not provide a cap that will be any more resistant to erosion than the existing cap. The proposed cap lacks special features, such as armoring or clay layers, that provide more stability than regular dirt. If ADEQ is truly concerned about erosion, it needs to engineer a cap that is resistant to erosion. The proposed remedy does not prevent erosion; it would only channel the erosion to the river instead of collecting it onsite, as is now the case.

The proposed storm water discharge may require an NPDES permit. ADEQ has not addressed who will apply for and receive the permit if one is required, how the permit procurement costs will be funded, who will obtain permit renewals, and who is responsible for complying with the requirements in the permit, including monitoring and reporting. If the permit is not required, ADEQ still needs to address how it will comply with the substantive requirements of the NPDES program.

Section 7.1.4, page 22 provides for an operations and maintenance plan to deal with long-term maintenance of storm water runoff controls and the cap. There is no information in the PRAP as to what this would involve, how much it would cost and who would pay the cost. Section 7.1.2 notes that institutional controls will have to be developed. No details are provided and responsibility for the costs and maintenance of the controls is not discussed. ADEQ suggests that a recorded deed restriction will be necessary. The statutes are not clear that a deed restriction can be required of a landowner, especially where the landowner does not select the remedy. Compare A.R.S. section 49-152(B) & (H) (landowner "electing" to use institutional controls) with section 49-158(A) (remedial action "including" an institutional control). It is unlikely the legislature intended to grant ADEQ the power to unilaterally force deed restrictions on property owners, for that would be an unconstitutional taking of property rights requiring compensation.

One of the most troublesome institutional control issues is restricting pumping of groundwater from the contaminated areas. ADEQ has orally indicated that the Arizona Department of Water Resources ("ADWR") will monitor the situation and either prohibit new wells or advise ADEQ of the possibility of new wells. A problem in controlling water use is ADEQ's and ADWR's lack of legal authority to prohibit someone from drilling a well, without compensation. Even if the State had statutory authority to limit well use, a proposition that seems doubtful, there is the potential that the well owners could sue the State for taking of the legal right to use the groundwater. ADEQ needs to devote more attention to water rights concerns and the enforceability of attempted restrictions on the use and installation of wells. This factor counsels

in favor of expediting the cleanup with active treatment in order to reduce the amount of time that groundwater pumping rights are impaired.

ADEQ and the City need to discuss the legal liability and costs for installing and maintaining the institutional controls and engineering controls. The City has already settled its liability for the Site and objects to any implication that it will now be called upon to accept a larger cost share that should be borne by the non-settling responsible parties and the WQARF fund. The settlement agreement reserved certain rights to the City and does not allow ADEQ to unilaterally impose land use controls and other restrictions on the property.

Specifically, ADEQ and the City need to discuss and resolve four groups of issues:

- 1. The exact nature of all institutional controls and engineering controls for the Site both at the landfill and within the larger plume area.
- 2. Responsibility for constructing, maintaining and assuming legal liability for the controls.
- 3. Funding for installing and maintaining the controls and any associated permits.
- 4. Restrictions on future land use, including sale or lease of the property. This includes identifying what the City is allowed to do at the site and those items that require ADEQ approval. If the property is leased or sold, the City's and transferee's responsibilities need to be defined.

These issues are most appropriately addressed in a negotiated agreement. In any event, resolution of these issues affects the cost and feasibility of the proposed remedy.

# Monitoring

Comment 9) Page 21, Section 7.1.3.2: The PRAP proposes a program of annual groundwater monitoring and sampling of 31 wells both on and offsite for VOCs, SVOCs, select metals and nitrate. These same wells will also be monitored for select parameters indicative of natural attenuation. In addition, there are nine "contingent monitoring events" that may be completed at the discretion of ADEQ after significant storm events in which high level surface flows are present in the Salt River. Annual monitoring is not adequate for a natural attenuation remedy that only has a 20-year limit with five-year reviews. Seasonal variations in rainfall and variations in groundwater flow directions may impact certain annual events, which could limit the validity of a five-year review by skewing the data. The City recommends that a subset of the 31 wells be selected as index wells that would be monitored and sampled twice per annum for the duration of the remedial action. This would increase the reliability that observed trends in groundwater concentrations are consistent with the remedy goals. With regard to the discretionary sampling that would be conducted when "high levels of surface flows are present in the Salt River," criteria which could include a range of magnitudes (i.e., cubic feet per second as measured at a specific location) and durations (i.e., the length of a flow event), should be efined. These would then be used to trigger when additional sampling was required.

Comment 10) Page 22, 2<sup>nd</sup> Paragraph: The PRAP includes a reference to a preliminary screening of the potential for biodegradation at the Estes Landfill site that will be conducted

following the "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Organics in Groundwater" (USEPA, 1998). Biodegradation has already been established and is discussed at length in the FS on pages 42 through 50. Harding ESE writes "Based on the evaluation of three methods of biodegradation compared to actual site data, it has been concluded that there is strong evidence that natural attenuation of the signature compounds is occurring through a combination of reductive dechlorination and direct oxidation." Please describe the value and purpose of conducting another screening level effort at this time.

Comment 11) Page 24, Section 7.1.6: The remedy includes Five-Year Reviews and says that time versus concentration trends associated with the VOCs must be included. Target groundwater concentrations for each COC must be established at each monitoring location to determine the effectiveness of the remedy during each Five-Year Review. This must include wells impacted by the offsite TCE plume to ensure the groundwater is usable by 2020. Additionally, how and when will achievement of the groundwater ROs be determined (e.g., what would be considered acceptable concentrations in which wells for how long)? Five-Year Reviews should be coordinated with the City (for land and water use plans) as well as with ADWR (for the groundwater use surveys).

# Contingency Plan

Comment 12) The PRAP needs to include a contingency plan acceptable to the City that would be implemented if it is determined that natural attenuation will not meet ROs in the specified timeframes. The contingency plan should be developed now and describe what ADEQ will do should the plume not degrade as expected. As noted above, target concentrations at specific time intervals need to be established for each well. Conditions that would trigger the contingency plan must also be developed. Since the proposed remedy has variable timeframes for when AWQS might be met, some of which are close to the time when the groundwater resource would be required, the contingency plan would have to be able to be implemented well before 2020. The cost of implementing the contingency plan should be determined now and included in the allocation amount.

There is also no mention of the southern TCE plume that impacts wells already impacted by the Estes plume, and this separate plume was not accounted for in the modeling used to predict achievement of the ROs. Since TCE exceeds AWQS in offsite wells impacted by Estes, how will the ROs be satisfied if monitoring indicates that groundwater cannot be used in 2020 because of TCE? The remedy needs to ensure that the aquifer near the Estes Landfill will be suitable for a municipal supply well by 2020 or sooner. The remedy and contingency plan also need to take into account the effects of pumping a large public supply well on whatever plume is left.

It is possible that an engineered cap and/or methane control may become necessary in the future, based on monitoring. These elements should also be included in the contingency plan so that funds will be available, if needed. For example, a future use of the site could include paving, which may necessitate methane control.

# Costs

Comment 13) Page 25, Section 7.2: The costs for the landfill cap are inadequate. The costs for fill and grading are likely too low and should have been based on actual documented site conditions rather than visual observation. The costs for the drainage swale assume no laterals and do not include drainage from the top of the relocated landfill to the main landfill surface. The costs also do not include Section 404 permitting for construction of the outfall in the river. The costs do not include sedimentation basins that may be required as part of the NPDES discharge permit (or program substantive requirements).

Comment 14) There is only \$2,000 budgeted for each of the six Five-Year Review & Reports for a total budget of \$12,000. This is probably sufficient for one or maybe two reports.

Comment 15) Costs for the fence maintenance are inadequate and do not include removal of wind-blown litter.

Comment 16) There is a \$2,000 line item for "filing of institutional controls". It is unclear what this is for.

Comment 17) There do not appear to be costs associated with filing of the DEUR, annual reporting, and review of redevelopment plans by ADEQ.

Comment 18) Costs for implementing the contingency plan need to be developed as part of the remedy.



# **City of Phoenix**

February 24, 2003

Mr. Jerry Smit
Responsible Party Search Manager
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, Az 85007
-via fax-

Additional Comments to Proposed Remedial Action Plan (PRAP) Estes Landfill WQARF Registry Site, Phoenix, Arizona

Dear Mr. Smiti

In addition to the City's written comments dated February 24, 2003 regarding the Estes Landfill WQARF Registry Site PRAP, we would like to submit an additional comment that was discussed in our meeting with the Department on February 11, 2003.

During the evaluation of the need for the landfill gas control, based on gas sampling, it was concluded that an unacceptable risk to human health was not currently present. Therefore, landfill gas collection was not included in the proposed remedy. The City believes that additional evaluation should be conducted to determine if landfill gas collection would be needed in the future if the site were developed. Future land use Remedial Objectives (ROs) include site redevelopment that would obviously include capping the site with asphalt or other low permeability materials. In the event of site redevelopment, there could, therefore, be a buildup of landfill gases in the subsurface that could ultimately result in the need for landfill gas collection.

The City understands that methane alone would not be considered a hazardous substance under the WQARF program. Nonetheless, site data collected during the Remedial Investigation indicates that hazardous substances, including vinyl chloride and numerous other Chemicals of Concern are present in the landfill gas. Special handling or treatment for these hazardous substances would need to be included in the design and operation of a methane gas collection system and should therefore be included in the State's overall remedy for the site. The City suggests this consideration for treatment be included in the site remediation cost estimates. Later enactment of a gas treatment system during the site redevelopment appears to present the most cost efficient way to handle this issue. The future ROs set for the site fully supports this remediation option.

The City of Phoenix appreciates this opportunity to provide these additional comments to ADEQ on the proposed remedy for the Estes Landfill. If you have any questions, please call me at (602) 273-2730.

Sincerely,

Environmental Programs Coordinator, City of Phoenix Aviation Department

cc: Karen O'Regan Carlos Padilla

Tom Buschatzke

Steve Rossi

Donn Stoltzfus

Karen Peters (SS&D)

Don Hansen (Clear Creek and Associates)

# REC'D OSBORN MALEDON P.A.

# NOV 2 2 2002



.. Putting Technology To Work .. 505 King Avenue Columbus, Ohio 43201-2693 Telephone (614) 424-6424 Facsimile (614) 424-5263

November 21, 2002

Keith Bowers
Manager, Remediation and Evaluation Services
Honeywell International, Inc.
M/S 2102-306
1944 E Sky Harbor Circle
Phoenix, AZ 85034

Attention: Mr. Keith Bowers

Subject: Estes Landfill Natural Attenuation Plan

Dear Keith:

At your request, I have reviewed the Final Proposed Remedial Action Plan for the ADEQ Estes Landfill WQARF Site, dated June 27, 2002. Specifically, I have reviewed the portions of that report concerning the proposed natural attenuation remedy and groundwater monitoring.

Based on that review, I believe the proposed remedy is reasonable and appropriate. The rationale behind the plan is solid and I believe it will work. I do not disagree with anything in the overall approach, however, I do believe some modifications may be made to reduce the overall cost without impacting the project. I also believe that it is very likely that the full 30-year term of the monitoring proposed may not be needed. I will outline the modifications and their impact on cost. All of my cost discussions will be based on the "actual" costs rather than the "low" or "high" costs as identified in the plan.

The natural attenuation monitoring is the monitoring of geochemical parameters that help provide evidence that conditions are right for biodegradation. This can be important in understanding natural attenuation, but at the Estes Landfill site it will be difficult to use these data on an ongoing basis. The problem is that we know complete anaerobic dechlorination is occurring. In fact, it is quite evident that almost all of the TCE is degraded. However, in looking at the geochemical data generated to date, it is hard to see clear evidence of the strongly anaerobic conditions required for dechlorination. There are a number of possible reasons for this. One is that the dechlorination is taking place at some location before the monitoring wells are encountered. It could possibly be occurring in the landfill before entering groundwater, or possibly in groundwater at some location upgradiant of the monitoring wells. It is also possible that the portions of the

Keith Bowers Honeywell International Inc Page 2

aquifer in which the dechlorination is occurring is crossed by screens that also sample more aerobic water, resulting in a blend in the monitoring well samples. The result is that the geochemical indicators of dechlorination are ambiguous.

Based on the daughter products seen in the aquifer, however, it is clear that this dechlorination is occurring. This makes monitoring of these geochemical conditions a less useful measure of natural attenuation than at most sites. I would recommend that this sampling and analysis be limited to annual collection of geochemical parameters to ORP, DO, alkalinity, Mg, Fe, sulfate, and nitrate. This will be sufficient to warn of any substantial geochemical changes in aquifer conditions, probably the only thing this natural attenuation monitoring can provide. I recommend dropping parameters such as hydrogen, methane, ethane, and ethane, as these are more likely to produce ambiguous and less useful results. In my experience, these parameters are not always measured as a part of natural attenuation monitoring plans. These adjustments would reduce the cost of monitoring by about \$5,000 per year, reducing the 30-year lifecycle cost of the natural attenuation effort by about \$100,000.

The proposed groundwater monitoring is for both volatile and semivolatile organic compounds. The contaminants of concern here appear to be chlorinated solvents, which are volatiles. The only semivolatile organic compound (SVOC) reported above PRGs is bis(2-ethylhexyl)phthalate, which is a plasticizer found in many common plastics. It is reported only sporadically in the Estes groundwater and shows no consistency in any given well. This is more indicative of either contamination by contact with plastics during sampling or in the laboratory and not of groundwater contamination. I recommend only analyzing samples for volatiles, which will reduce the cost of analysis by an estimated \$10,000 per year, reducing the 30-year lifecycle cost by about \$200,000.

The purpose of monitoring groundwater is threefold: first, to make sure the biodegradation is continuing; second, to insure that the plume does not migrate (sentinel wells); and third, to insure that the contamination self-remediates. I believe the number of wells proposed for monitoring could be reduced and still achieve these goals. F1 appears to contain very little contamination, I see no reason to monitor in this layer. In F2, I recommend monitoring EW-PZ1 and EW-PZ5 to insure biodegradation and to monitor self-remediation, and EW-4 and EW-PZ11 as sentinel wells. In F3, I recommend monitoring EW-5, EW-6, and EW-19 to ensure biodegradation and selfremediation, and EW-23 and EW-27 as sentinel wells. In F4, I recommend mentoring EW-8 as a deep sentinel well. With these wells, I believe the goals of the groundwater monitoring can be achieved. I recommend that the number and location of wells being monitored be reevaluated on an annual basis and additions or deletions made. I estimate that in total no more than 15 wells need be sampled each year. I would recommend maintaining all wells and taking water level measurements from all wells at the time of groundwater sampling. Assuming that work plan, well maintenance, project management, reporting and contingency remains unchanged, this approach should reduce the cost of sampling by an estimated \$22,500 per year or \$450,000 over the 30-year life

Keith Bowers Honeywell International Inc Page 3

cycle. Note this estimate assumes no SVOC analysis and that the savings from that are captured in the discussion above of not sampling SVOCs.

In addition to these cost savings there are some costs in the plan I do not understand. Groundwater monitoring includes 9 contingent monitoring events with a total cost of \$382,291. This is in addition to a 20% contingency cost estimate of \$417,651. I do not believe there is a need for the double contingency. I let the \$417,651 cost estimate stand, which after the suggested savings represents 37% of the total cost. I believe this is an adequate contingency, and recommend dropping the contingent sampling cost, for a savings of \$382,291.

The other potential cost saving is in reduced monitoring over time. As low as the concentrations are in this plume and as active as biodegradation appears to be, I believe it is very likely that the plume will self-remediate in well under 30 years, eliminating the need for monitoring. I have not included a cost savings estimate for this, nonetheless I do believe the program will not need to be in place for the full 30-year lifecycle. This will result in real cost savings.

With these recommended modifications I believe the integrity of the natural attenuation and groundwater monitoring program will be maintained and its objectives met. I also believe that with these modifications sufficient money has been set aside for contingency and modification. Applying these savings, the cost of the natural attenuation would be \$101,283 and the groundwater monitoring \$1,473,617, for a total of \$1,574,900, a savings of about \$1,133,000 over the original estimate. In my experience this is a generous cost estimate for a 30 year natural attenuation and groundwater monitoring program.

If you have any questions or require additional information please call.

Sincerely,

Robert E. Hinchee, Ph.D.

Robert E. Hinchee, Ph.D.
Senior Research Leader
Environmental Restoration Department

REH:gm Enclosure

cc: Dave Campbell
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2929 North Central Ave.
21<sup>st</sup> Floor
Phoenix, AZ 85012-2794

8777 E. Via de Ventura Suite 375 Scottsdale, AZ 85258 (480) 348-1244 • FAX (480) 348-1245



February 24, 2003

Mr. Tom DiDomizio Arizona Department of Environmental Quality 1100 W. Washington St. Phoenix, AZ 85007

Subject:

Estes Landfill Final Proposed Remedial Action Plan Comments

ADEQ Estes Landfill WQARF Site, Phoenix, AZ

Dear Tom:

The purpose of this letter is to provide comments concerning the Final Proposed Remedial Action Plan (Final PRAP), dated June 27, 2002, prepared by Harding ESE. In general, the Final PRAP does a good job in describing the various proposed remedies and how they will meet the remedial objectives.

With respect to Section 6.0 Feasibility Study Results Summary, is it required for one of the alternatives to be the "Most Aggressive Alternative" available or can alternave A.1 simply be a more aggressive alternative than A.2? Specifically, can Alternative A.1 include the following options:

- a) modification of the existing cap to include storm water runoff controls;
- institutional controls that prevent atleration of the integrity of the cap;
- source remediation via an in situ bioremediation approach; and
- monitoring. d)

The A.1 alternative described above would provide a faster time for groundwater remediation, especially if the natural attenuation processes became limited within a shorter time period than applied to the groundwater modeling approach.

The groundwater monitoring program for a natural attenuation or enhanced in situ bioremediation approach should have a series of monitoring wells, which should include the following:

- upgradient
- side gradient well
- source area well



- downgradient well(s) of source area well (flow path), and
- downgradient of plume

It appears that there are more wells identified for the monitoring program than may be necessary to monitor natural attenuation conditions at the site. In section 7.1.3.2, the following parameters should be included in the natural attenuation monitoring program: temperature, conductivity, and possibly volatile fatty acids. Has the groundwater at this site ever been tested for volatile fatty acids or phopholipid fatty acid (PLFA) analysis? The PLFA analysis is beneficial to understanding the health of the indigenous microbial population. I would be happy to provide you with information concerning the significance of the PLFA analysis to biodegradation of contaminants.

Please feel free to call me with any questions at 480-348-1283.

Sincerely yours,

Laurie T. LaPat-Polasko, Ph.D., QEP

Principal Scientist



May 1, 2015



Arizona Department of Environmental Quality Waste Programs Division 1110 W. Washington Street Phoenix, AZ 85007

RE: Proposed Remedial Action Plan for Estes Landfill WQARF Registry Site, dated February 9, 2015

I am writing to provide comments on behalf of the City of Phoenix (Phoenix) concerning the February 9, 2015 Proposed Remedial Action Plan (PRAP) for the Estes Landfill WQARF site.

Section 1.1. bullet 3: As a point of clarification it should be noted that Estes Landfill, Air National Guard and Phoenix Sky Harbor International Airport are all Phoenix properties. Phoenix also has a 404 permit to maintain a portion of the Salt River area located between Estes and the Airport for the purposes of safety, wildlife management, and security per Federal Aviation Administration and Department of Homeland Security regulations.

In the Site Background Section of the report there is discussion about methane concentrations at the landfill. Phoenix concurs with the report that site conditions do not exist that allows for the build-up of methane, therefore it is not an issue. The data regarding this discussion appears to be from 2008. In 2014, Phoenix hired Clear Creek to assess the methane at Estes Landfill. Enclosed is a copy of the report which contains this more current data for your reference.

Section 4.1 Monitoring Well Survey, Page 12, bullet 5: The consultant noted issues trying to access EW-22, EW23 or ANG-02, which are on Phoenix – Aviation Department property. Although we do not disagree with the decision to remove these wells from the monitoring program, Phoenix wants to advise ADEQ that we are unaware of any attempt by the consultant to coordinate access to these wells for monitoring purposes.

Table 1, Page 19: Phoenix has enclosed with this response, a copy of our 2014 methane assessment of Estes Landfill and requests this current date be used in place of the 2008 methane data.

Mr. Scott Green May 1, 2015 Page 2 of 2

<u>Section 6.0, Page 23:</u> Phoenix agrees that RO's for the Estes Landfill have changed and that the ADEQ WQARF Program is not responsible for soil cover maintenance, institution controls, and security. Phoenix further concurs with ADEQ that the PRAP for Estes should be monitored natural attenuation and groundwater monitoring.

<u>Section 7.1 Page 23:</u> As property owner, Phoenix requests copies of the analytical data for the next 15 years of monitoring or until clean up goals are achieved.

<u>Section 7.1.1, Page 25, next to last paragraph:</u> Phoenix suggests that ADEQ consider remaining flexible regarding the number of wells to be monitored. Phoenix anticipates that as the natural attenuation remedy progresses and the areal extent exhibiting the COCs decreases the number of wells required to be monitored can be likewise decreased over time.

Section 8.1, Page 28, 2nd Sentence: Same comment as on Page 23 in Section 6.0.

ADEQ makes reference to a "landfill cap" throughout the document. The term "landfill cap" is commonly associated with the final cover system required for closure pursuant to 40 CFR 258. To prevent confusion of terminology Phoenix requests ADEQ to substitute the term "landfill cap" with "landfill soil cover" as our records do not demonstrate that an engineered final cover system was installed at the Estes Landfill.

ADEQ makes reference to "the former liquid waste disposal pit is also no longer covered by the current capped landfill" in several places in the report. Phoenix didn't remove soil cover from this area - so the area of the former liquid waste disposal pit was left as is. Phoenix requests this text be reworded to clarify that no changes of this area have occurred at the site since 2002.

Respectfully.

Joe Giudice

**Environmental Programs Manager (Acting)** 

Attachment

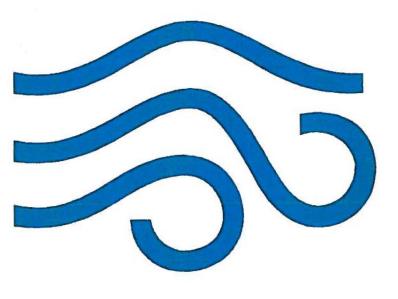
c: Stephen Wetherell, COP/Law Judy Ross, COP/Aviation Julie Riemenschneider, COP/Aviation

## ESTES LANDFILL LANDFILL GAS STUDY PHOENIX, ARIZONA

## Prepared For:

City of Phoenix Aviation – Planning and Environmental 3400 East Sky Harbor Blvd. Suite 3300 Phoenix, AZ 85034-4405





## **Prepared By**

Clear Creek Associates, PLC 6155 E. Indian School Rd., Suite 200 Scottsdale, Arizona 85251 26036 DUNALD P. HANSON, J. P. Stenedars FONA, U.S. Exp 3-31-16

**July 2014** 



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### **TABLE**

Table 1. Summary of Landfill Gas Monitoring Results

#### **ATTACHMENT**

Landfill Gas Monitoring Plan

#### 1.0 INTRODUCTION

This report has been prepared to document the results of a landfill gas monitoring program conducted at the closed Estes Landfill (Estes or landfill). The landfill is owned by the City of Phoenix Aviation Department (City). Clear Creek Associates, PLC (Clear Creek) was retained by the City to assess the condition of several methane monitoring probes, develop a methane monitoring work plan, and complete several rounds of landfill gas monitoring.

#### 1.1 BACKGROUND

Estes is located on the south side of the Salt River between 40<sup>th</sup> and 45<sup>th</sup> Streets in Phoenix, Arizona. Another privately owned landfill (Bradley Landfill) is located immediately south and adjacent to Estes. Figure 1 shows the locations of both landfills as well as other land uses in the area.

Estes was privately owned and operated from the early 1950s until 1972, when it was permanently closed to landfill operations. In 1978, 1979 and 1980, flooding along the Salt River caused substantial damage to both public and private property along the river, including the Phoenix Sky harbor International Airport. As a result, the City, in conjunction with local, State and Federal flood control and transportation agencies, developed a program of river channelization and bank stabilization. In order to complete the project, a large portion of the landfill that was located in the river bed needed to be relocated. In 1982, the City acquired Estes through eminent domain to complete the project. The excavated material was screened for hazardous materials, which were removed and transported off site to a proper disposal facility. The non-hazardous material was placed on top of the remaining landfill and a non-landfilled area to the east.

Between 1980 and 1982, groundwater contamination was discovered in two industrial water supply wells. The primary contaminants were several volatile organic compounds (VOCs). From approximately 1987 through 1998, the City conducted several phases of remedial investigation, with oversight from the Arizona Department of Environmental Quality (ADEQ). In March 1999, ADEQ took over responsibility for monitoring and other site activities. To date the Estes Landfill remains on ADEQ's Water Quality Assurance Revolving Fund (WQARF) list.

As part of the City's investigations of soil and groundwater contamination conducted at the landfill by Harding Lawson Associates (HLA), 17 pairs of permanent Landfill Gas Probes were installed and sampled (PP-1 through PP-17). Shallow (~5 feet) and deep (~15-20 feet) probes

were installed at each location. Permanent probes PP-1 through PP-13 were sampled in September 1994 and permanent probes PP-14 through PP-17 were sampled in July 1995. During those events, methane concentrations ranged from non-detect to 62 percent by volume. Figure 2 is a copy of the methane monitoring results from 1994/1995.

In 2008, Mactec Engineering and Consulting, Inc. (Mactec) sampled several of the probes for VOCs and methane. Methane concentrations were lower in 2008 than during the mid-1990s sampling event. More recently, the City retained SCS Engineers (SCS) to evaluate the condition of the permanent probes. In their June 2013 letter report, SCS indicated that only probes PP-3, PP-4, PP-5, PP-6, PP-7, PP-9, and PP-10 were observed. They further indicated that several of the deep probes contained significant fill or were damaged.

#### 1.2 PURPOSE

The purpose of this project was to assess current methane concentrations in around the Estes Landfill. Most landfills are required to comply with municipal solid waste landfill (MSWLF) regulations under Title 40, Part 258 of the Code of Federal Regulations (CFR), specifically CFR 258.61 and 258.23. These regulations were promulgated on October 9, 1991 and describe landfill gas monitoring requirements. Because Estes was closed in 1972, prior to these regulations and prior to the establishment of the Resource Conservation and Recovery Act of 1976, these regulations do not apply. However, City staff have determined that 40 CFR Part 257, specifically 257.3-8, does apply because of the potential for explosive gases. Clear Creek concurs with this assessment and, in essence, the requirements of the two different regulations are similar. The requirements include:

- (1) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit (LEL) for methane in facility structures (excluding gas control or recovery system components); and
- (2) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.

Because there are no structures on Estes, only No.2 applies. The LEL for methane in air as a percent by volume (%/v) is 5%/v.

#### 1.3 SCOPE OF WORK

The scope of work for this project included the following elements:

- Conducted a pre-sampling site visit to locate and assess the condition of the probes. This included evaluation of the sample ports, tubing, probe housings, pads, depth measurements, photo documentation, and GPS measurements.
- Completed an initial round of monitoring of all the probes. Based on the findings, a Landfill Gas Monitoring Plan was developed for subsequent monitoring events.
   In addition to perimeter landfill gas probes, three deeper monitor wells/piezometers were also included in the plan.
- Conducted four rounds of landfill gas monitoring.
- Compiled the results, met with City staff and developed this report including recommendations for future monitoring.

#### 2.0 SITE ACTIVITIES

#### 2.1 INITIAL INVESTIGATION

An initial site visit was conducted to assess the condition of the soil vapor probes, which probes still remained and the current depths of the soil vapor probes. This work was conducted on December 19, 2013. Each location generally consists of two three quarter inch probes that contain a compression coupling and a cap with a one quarter inch hose barb on the top. The hose barb and cap were removed in order to measure the depth of the soil vapor probe. A steel tape, marked at every foot, was lowered down the probe until it reached bottom. The probes ranged in depth from six feet below the top of the probe to twenty one and a half feet below the top of the probe. The caps were then replaced and tightened with the compression coupling. With the depths of the probes known, the volume of each probe could be calculated in milliliters using the equation, volume in  $ml = ((diameter of probe/2)^2 \times 3.14) \times (length of probe \times 12) \times 16.387$ . Each probe will then be evacuated of their calculated volume before monitoring for methane.

During the initial investigation soil vapor probes PP1, 8, 14, 15, 16 and 17 could not be located. They have either been abandoned or destroyed by past activities. PP10 was located inside a large concrete pipe and could not be accessed. Subsequently, it was determined that the pipe constituted a confined space entry space. Ultimately, the pipe was removed and access was obtained.

Additionally, the depth to water was measured in six different monitor wells in order to determine if they could be utilized for deeper methane measurements. Three of the wells had screen intervals above the water table which enabled them to be used for methane measurements. They include PZ2, PZ6 and EW4. Figures 3, 4, 5 & 6 show the locations and illustrate the condition of the sampling points, their depths, and their GPS coordinates as measured in the field.

#### 2.2 MONITORING PROCEDURES

The first monitoring round was conducted on December 30, 2013. This event included all the soil vapor probes except for PP10 (still within the concrete pipe) and the groundwater monitoring wells. After completion of this initial round was completed, the results were evaluated and a brief landfill sampling plan was prepared. A copy of the sampling plan is included as an attachment. Subsequent monitoring was delayed until the concrete pipe could be removed from PP-10. Four rounds of measurements were then conducted in February and March of 2014, that

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included the perimeter soil vapor probes at the surface and the three monitor wells. Probes on top of the relocated portion of the landfill were not monitored as they are not subject to 40 CFR 257.3-8.

Prior to taking landfill gas readings, a Magnehelic gauge was used to measure relative subsurface pressure at each soil vapor probe. Due to the shallow nature of the probes, subsurface pressures were identical to surface pressures. Next, a small vacuum pump with an inline flow meter was connected to the hose barb on the top of each probe. Each probe was evacuated at a rate of 200 milliliters per minute for a sufficient amount of time to ensure that their calculated probe volume was evacuated prior to monitoring. A landfill gas meter (Landtech GEM 2000) was then attached directly to the hose barb on the probe for measurements. The meter takes readings of methane, carbon dioxide and oxygen in percent by volume and methane in percent of the LEL. The landfill gas meter remained attached to the probe with readings being recorded every minute until the readings had stabilized.

The three groundwater wells were monitored by installing a tubing system specifically constructed for each well. Quarter inch inside diameter tubing was cut to specific lengths for each well so that the air from the screened interval of the well that is above the water table can be monitored. Wells PZ2, PZ6 and EW4 were monitored at depths of 45 feet, 68 feet and 75 feet below the top of their casings respectively. A piece of rebar or small weights were taped to one end of the tubing to insure the tubing would reach the desired depth. The tubing was then evacuated using the vacuum pump at 200 milliliters per minute. Once evacuated the landfill gas monitor was attached to the tubing so that it could measure the air from the specific depths. The landfill gas meter remained attached to the tubing with readings being recorded every minute until the readings had stabilized.

#### 3.0 RESULTS AND CONCLUSIONS

Landfill gas monitoring was conducted on December 30, 2013, February 14, 2014, February 21, 2014, February 28, 2014 and March 28, 2014. A summary of the methane concentrations reported in %LEL for each location is included below. Shallow probes include an "s" and deep probes include a "d" after the probe number. Historical probe depths are included on Figure 2 and current depths are included on Figures 3 – 6 and in Table 1.

Methane Concentrations as % of the LEL

	12/30/13	2/14/14	2/21/14	2/28/14	3/28/14
PP2s	0	0	Ō	0	0
PP2d	Ô	0	Õ	0	0
PP3s	0	0	0	0	0
PP3d	Ō	0	0	0	0
PP4s	0	0	0	0	0
PP4d	36	26	17	0	0
PP5s	0	0	0	0	0
PP5d	0	Ō	0	0	0
PP6s	0	0	0	0	0
PP6d	>100	13	0	56	0
PP7s	0	0	0	0	0
PP7d	0	0	1	1	1
PP9s	MARKET OF	1	3	1	1
PP9d	>100	>100	>100	>100	0
PP10s	NS	0	3	0	Q
PP10d	NS	>100	>100	>100	80
PP11s	0	NS	NS	NS	NS
PP11d	0	NS	NS	ÑS	NS
PP12s	>100	NS	NS	NS	NS
PP12d	>100	NS	NS	NS	NS
PP13s		NS	NS	NS	NS
PP13d	>100	NS	NS	NŠ	NS
P7.2	NS	0	4	0	0
PZ6	NS	Ô	0	0	0
EW4	NS	0	7.4.3 A	0	0

NS = Not sampled

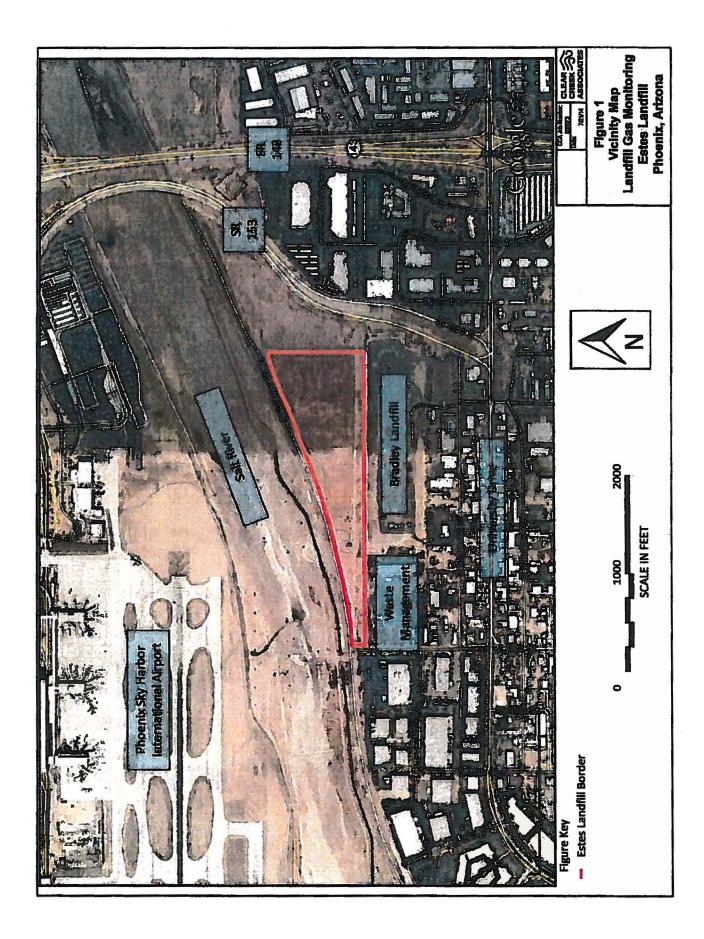
A complete list of landfill gas readings including oxygen, carbon dioxide and methane as a percent by volume in air as well as barometric pressure on the sample dates is included in Table 1.

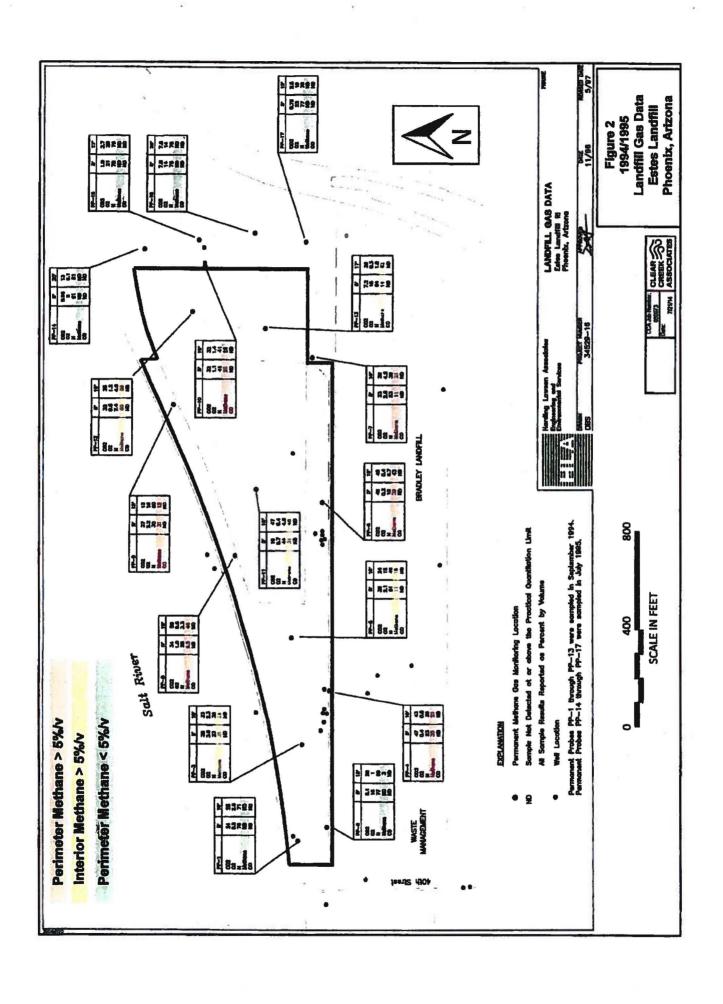
Clear Creek evaluated the results and prepared graphs of the data to evaluate possible trends. These graphs are included on Figures 7 through 14. In the western portion of the landfill, methane was not detected in EW4, PP2 or PP3 (Figures 7 & 8). Further west, methane was below detection in PZ6, PP5 and PP4s (Figures 9 & 10). Methane was detected in PP4d but the concentrations were below the LEL. Other locations where methane was detected were PP6d located between Estes and Bradley (Figure 11), PP10 located on the east side of the relocated material (Figure 13), and PP9d located on the north side of the landfill next to the Salt River (Figure 14). In locations where methane was detected, it was not detected above the LEL in any shallow probes. Also, it was noted that methane concentrations generally declined with subsequent monitoring events. During the final sampling event, methane was below the LEL at all monitored location, both shallow and deep.

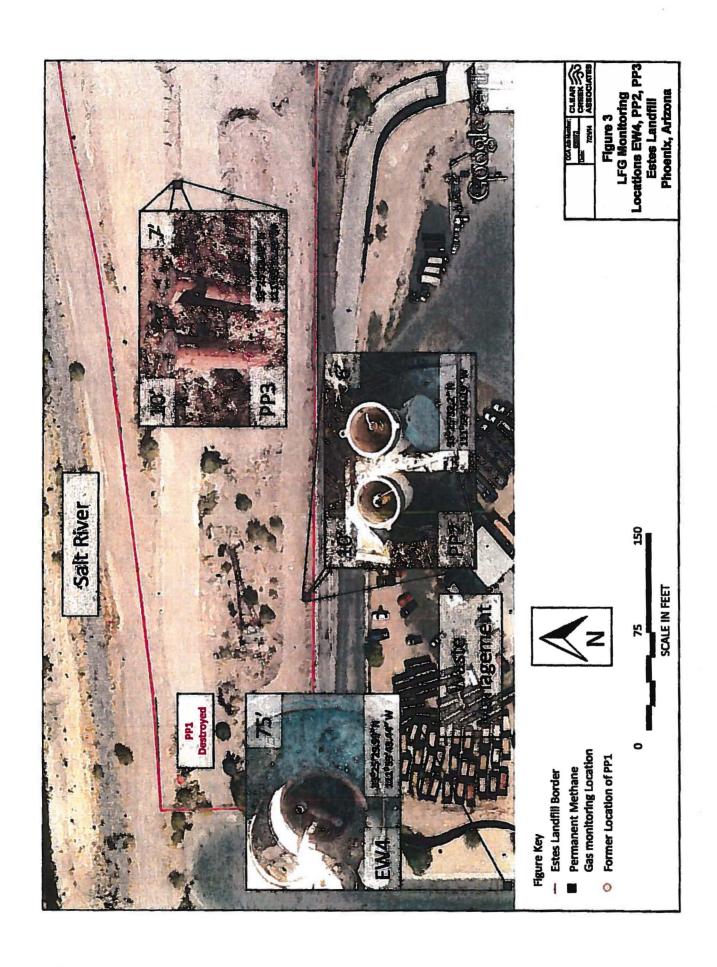
It appears that methane generation is still ongoing at Estes mostly in the eastern portion of the site. It also appears that the rate of generation is slow as evidenced by the declining methane concentrations observed over the course of this recent monitoring period, and through time from the first sampling event in 1994/1995 to the sampling in 2008 and finally to this recent sampling in 2013/2014. Clear Creek believes that the high methane concentrations observed during the 1994/1995 sampling period may have been the result of the 1992/1993 flood events in the Salt River which caused water levels beneath the landfill to rise nearly 40 feet. This rise in water levels re-saturated buried refuse. By 1994/1995 the water levels had declined ~ 25 feet. This saturation/desaturation likely caused an increase in methane production. Given that Estes was closed over 40 years ago, it stands to reason that methane generation should be relatively low. It is also likely that the Bradley landfill is generating methane. During the site work, Clear Creek noted that a passive methane venting system is present on Bradley near PP7.

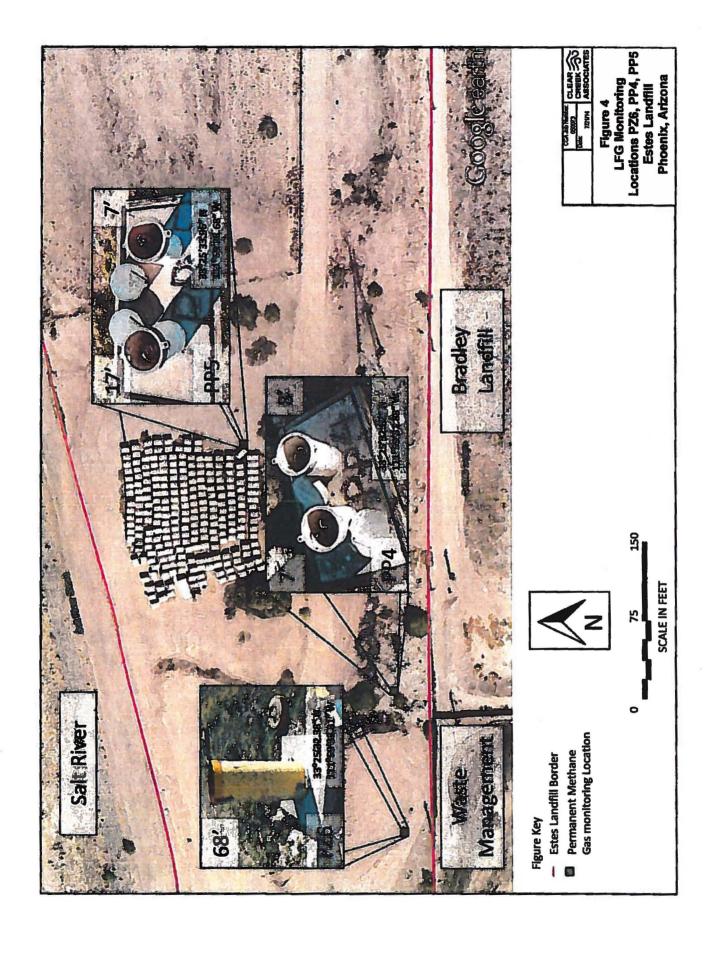
Based on the results, Estes appears to meet the requirements of 40 CFR 257.3-8. Because there are no structures on the landfill, criteria No. 1 does not apply. While some concentrations of methane were above the LEL, those occurred at either interior locations or deep perimeter locations where the adjacent property uses include, the Salt River, City property east of the landfill used for stockpiling clean soil, and between Bradley and Estes. Further all deep and shallow locations were below the LEL for methane during the final sampling event.

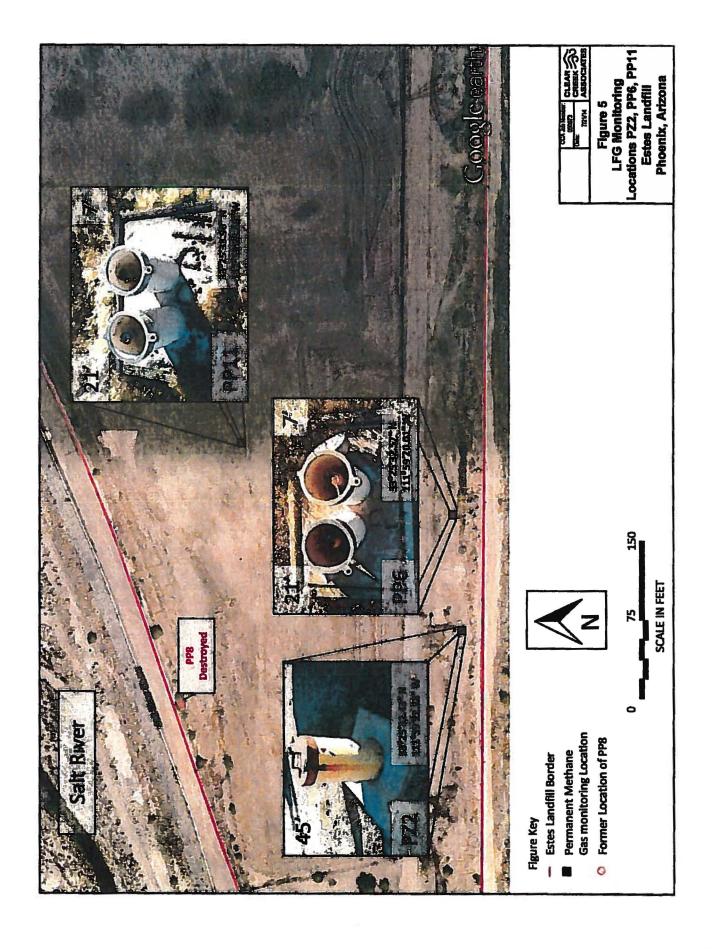
## **FIGURES**

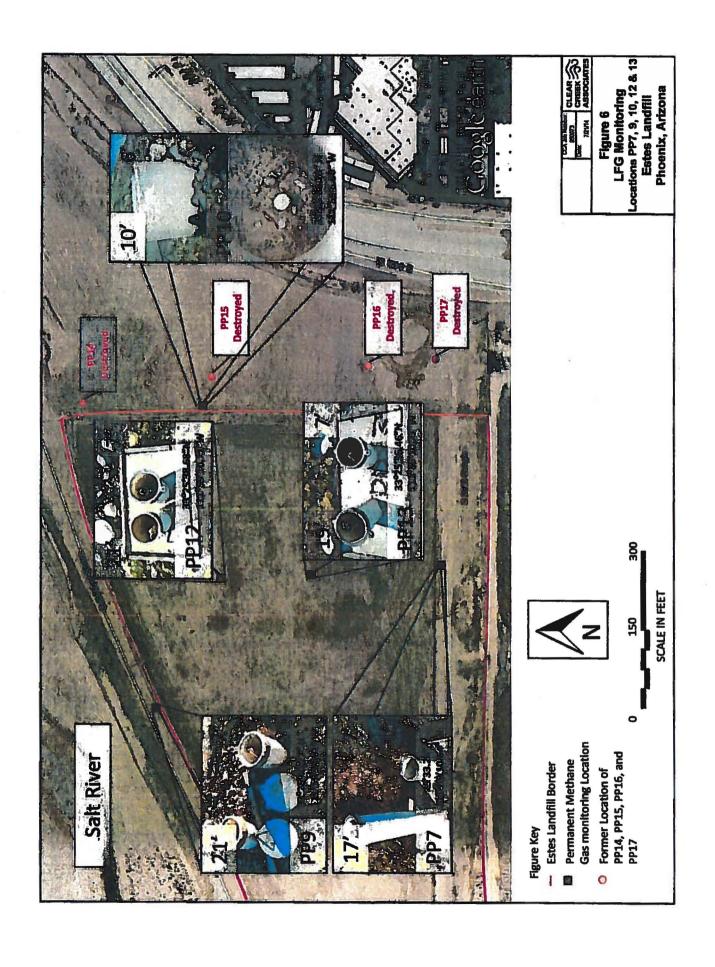


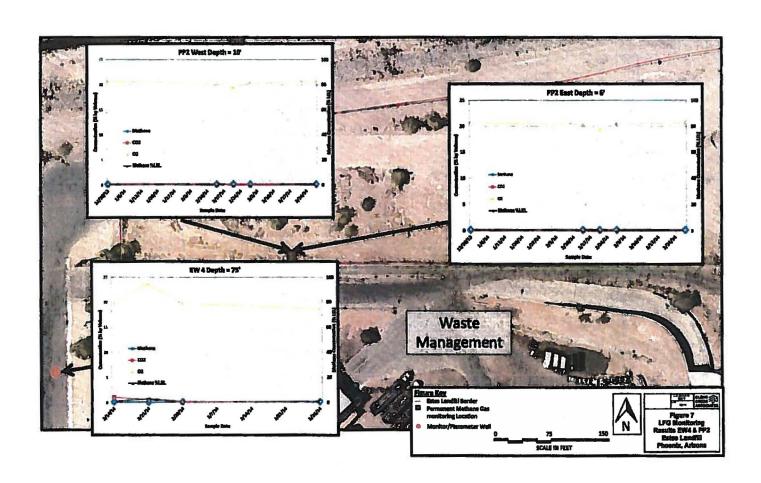


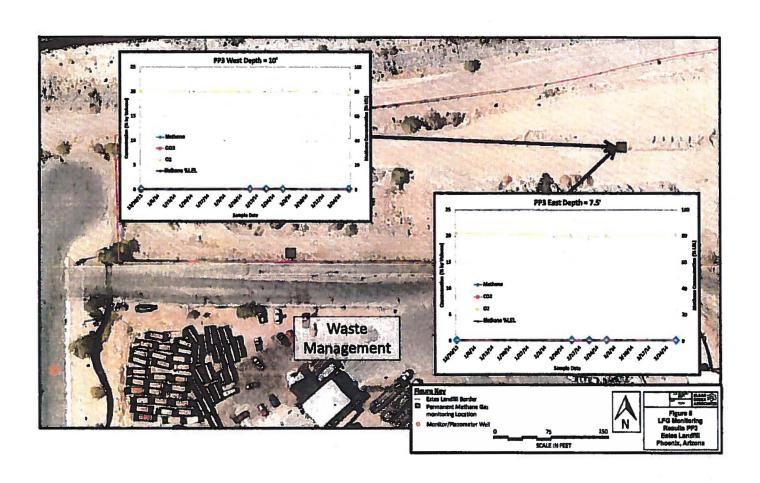


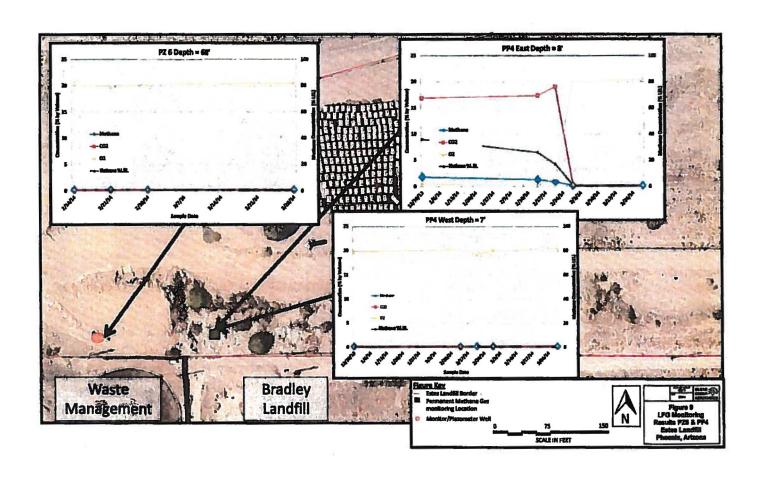


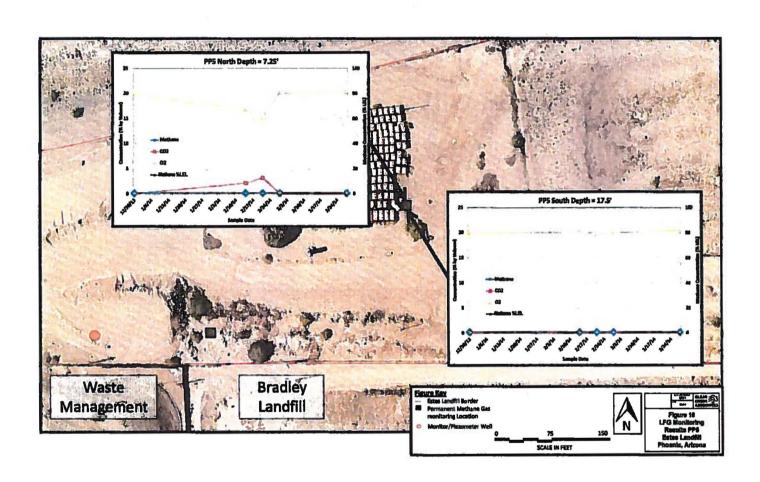


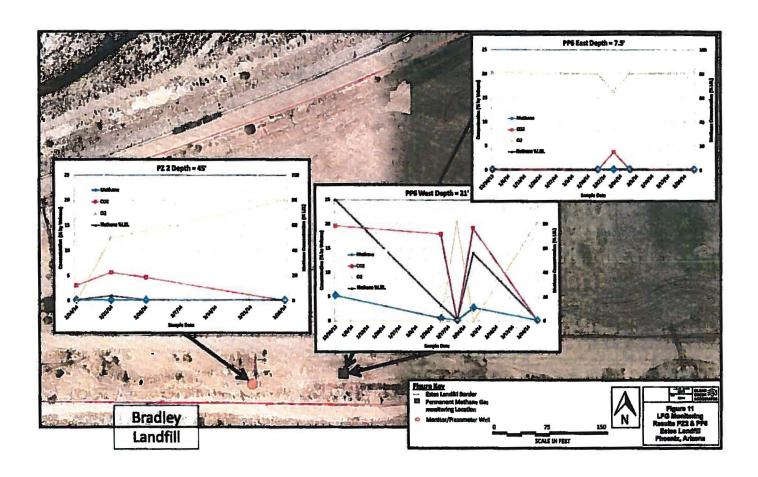


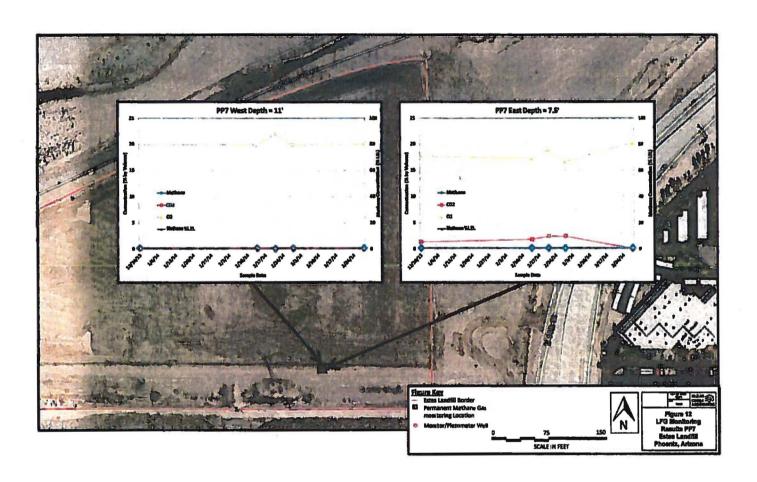


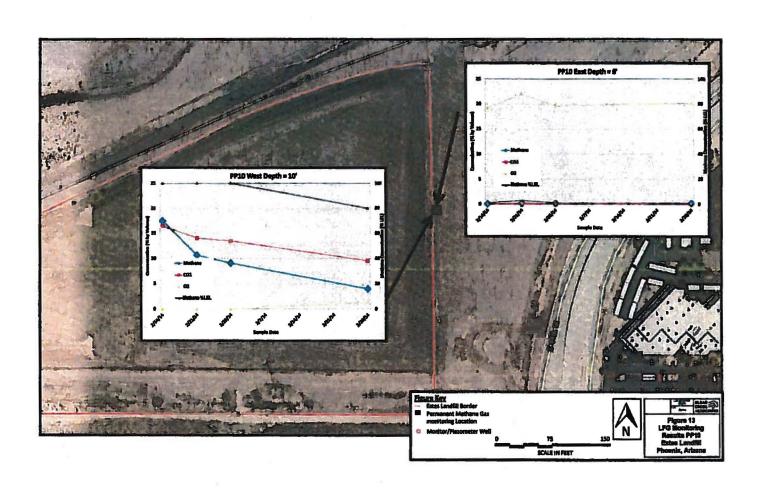


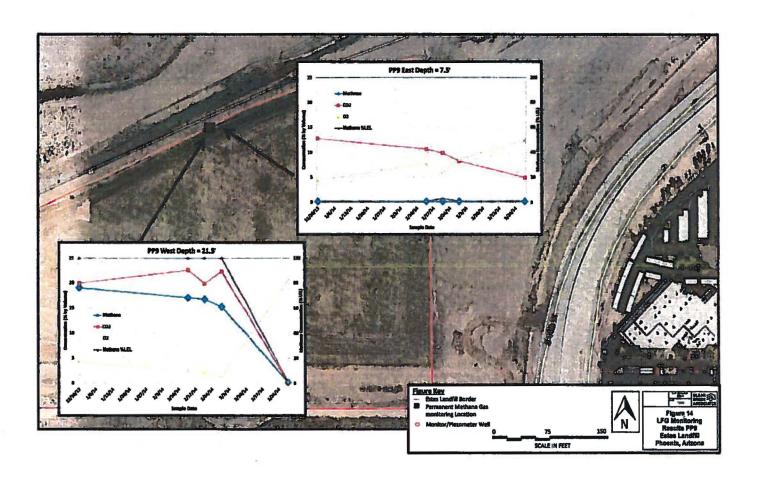












**TABLES** 

TABLE 1
SUMMARY OF LANDFILL GAS MONITORING RESULTS
ESTES LANDFILL

Well	Depth Dote		Percent by Volume			Percent LEL	Barometric
wen	(ft.)	Date	Methane	CO2	02	Methane	pressure
PP2 East (s)	6	12/30/2013	0	0	20.7		28.96
	6	2/14/2014	0	0	20.4	0	28.83
	6	2/21/2014	0	0	19.5	0	28.87
	6	2/28/2014	0	0	20.5	0	29.77
1.5	6	3/28/2014	0	0	20.7	0	30.03
PP2 West (d)	10	12/30/2013	0	Ō	20.7	0	28.98
	10	2/14/2014	0	0	20.2	0	28.83
	10	2/21/2014	0	0.1	19.5	0	28.87
	10	2/28/2014	0	0	20.3	0	29.77
	10	3/28/2014	0	0	20.6	0	30.03
PP3 East (s)	7	12/30/2013	0	0	20.6	0	28.98
	7	2/14/2014	0	0.1	20.1	0	28.83
	7	2/21/2014	0	0	19.6	0	28.87
	7	2/28/2014	0	0	20.2	0	29.77
	7	3/28/2014	0	0	20.3	0	30.03
PP3 West (d)	10	12/30/2013	0	. 0	20,2	0	28.98
	10	2/14/2014	0	0.1	20.1	0	28.83
	10	2/21/2014	0	0.1	19.6	0	28.87
	10	2/28/2014	0	0	20.2	0	29.77
	10	3/28/2014	0	0	19.5	0	30.03
PP4 East (d)	8	12/30/2013	1.8	16.9	0.5	36	28.98
	8	2/14/2014	1.3	17.4	0.2	26	28.83
	8	2/21/2014	0.9	19.1	1.6	17	28.87
	8	2/28/2014	0	0	20.1	0	29.77
	8	3/28/2014	0	0	20.4	0	30.03
PP4 West (s)	7	12/30/2013	0	0	19.8	Ō	28.98
	7	2/14/2014	0	0	20.3	0	28.83
	7	2/21/2014	. 0	0	19.2	0	28.87
	7	2/28/2014	0	Ó	20.1	0	29.77
	7	3/28/2014	0	0	20.5	0	30.03
PP5 North (s)	7	12/30/2013	0	0	19.8	0	28,98
	7	2/14/2014	0	2.2	16.8	0	28.83
	7	2/21/2014	0	3.2	15.1		28.87
	7	2/28/2014	0	0	20.1	Ö	29.77
	7	3/28/2014	0	0	20.4	0	30.03
PP5 South (d)	17	12/30/2013	0	0	20	0	28.98
N.	17	2/14/2014		0	20.2	0	28.83
	17	2/21/2014	0	0	19.7	0	28.87
	17	2/28/2014	0	0	20.1	. 0	29.77
	17	3/28/2014		0	20.4	0	30.03

TABLE 1
SUMMARY OF LANDFILL GAS MONITORING RESULTS
ESTES LANDFILL

Well	Depth		Percent by Volume			Percent LEL	Barometric
wen	(ft.)	Date	Methane	CO2	<b>O2</b>	Methane	pressure
PP6 East (s)	The state of	12/30/2013	Ō	0	20.4	0	28.98
	7	2/14/2014	0	0	20.1	0	28.83
	7	2/21/2014	0	3.8	16.4	0	28.87
	7	2/28/2014	0	0	20.1	0	29.77
	7	3/28/2014	0	0	20.3	0	30.03
PP6 West (d)	21	12/30/2013	5.3	19.7	0.1	>100	28.98
	21	2/14/2014	0.6	18	0	13	28.83
	21	2/21/2014	0	0.1	20.5	0	28.87
	21	2/28/2014	2.8	19.2	0	56	29.77
	21	3/28/2014	0	0	20.3	0	30.03
PP7 East (s)	7	12/30/2013	0	1.4	17.8	Ö	28.98
	7	2/14/2014	0	1.9	17.3	. 0	28.83
	7	2/21/2014	0	2.5	18.9	0	28.87
	7	2/28/2014	0	2.5	16.7	0	29.77
	7	3/28/2014	0	0	20.2	0	30.03
PP7 West (d)	17	12/30/2013	0	0	19.9	0	28.98
	17	2/14/2014	0	0	19.8	0	28.83
	17	2/21/2014	0.1	0.1	22	1	28.87
	17	2/28/2014	0	0	19.9	1	29.77
<del></del>	17	3/28/2014	0	0	20.1	1	30.03
PP9 East (s)	7	12/30/2013	0	12.8	4.4	1	28.98
	7	2/14/2014	0	10.7	7.8	1	28.77
	7	2/21/2014	0.2	9.9	5.9	3	28.87
	7	2/28/2014	0	8.3	8.7	1	29.77
	7	3/28/2014	0	5	12.4	1	30.03
PP9 West (d)	21	12/30/2013	19.1	20	4.3	>100	28.98
	21	2/14/2014	17.1	22.6	2.5	>100	28.77
48.5	21	2/21/2014	16.8	19.9	2.2	>100	28.87
	21	2/28/2014	15.3	22.3	1.4	>100	29.7
	21	3/28/2014	0	0	20.5	0	30.03
PP10 East (s)	6	2/14/2014	0.1	0.2	19.2	0	28.79
	6	2/21/2014	0.2	0	22		28.87
	6	2/28/2014	0	0	19.6	0	29.77
	6	3/28/2014		0	20.2	. 0	30.03
PP10 West (d)	10	2/14/2014	17.5	16.5	0	>100	28.79
	10	2/21/2014	10.7	14.1	C	>100	28.8
	10	2/28/2014	9.1	13.5	C	>100	29.7
	10	3/28/2014		9.6	1.3	80	30.03
PP11 North (s)	7	12/30/2013	100000000000000000000000000000000000000	0	20.4	0	28.9
PP11 South (d)	21	12/30/2013	0	0	20.6	0	28.9

TABLE 1
SUMMARY OF LANDFILL GAS MONITORING RESULTS
ESTES LANDFILL

sárali	Depth	D.54-	Percent by Volume			Percent LEL	Barometric
Well	(ft.)	Date	Methane	CO2	02	Methane	pressure
PP12 East (s)	7	12/30/2013	48.4	16	0.1	>100	28.98
PP12 West (d)	21	12/30/2013	13.6	15.9	. 0	>100	28,98
PP13 West (s)	7	12/30/2013	0	0	20.2	1	28.98
PP13 East (d)	19	12/30/2013	55:6	28.1	0.2	>100	28.98
PZ 2	45	2/14/2014	0	3.1	16.2	0	28.83
	45	2/21/2014	0.2	5.7	12.5	4	28.87
	45	2/28/2014	0	4.7	13.8	0	29.77
	45	3/28/2014	0	0	20	0	30.03
PZ 6	68	2/14/2014	0	0	20.1	0	28.77
	68	2/21/2014	0	0	19.8	. 0	28.87
	68	2/28/2014	0	0	20.2	0	29.77
	68	3/28/2014	0	0	20.5	0	30.03
EW-4	75	2/14/2014	0	1.1	19.7	0	28.74
	75	2/21/2014	0.1	0.6	23.7	3	28.87
	75	2/28/2014	0	0	19.8	O	29.77
	75	3/28/2014	0	0.3	18.7	0	30.03

## **ATTACHMENT**

# LANDFILL GAS MONITORING PLAN ESTES LANDFILL

For

**CITY OF PHOENIX** 

**AVIATION – PLANNING and ENVIRONMENTAL** 

January 2014



#### Introduction

Landfill gas monitoring will be conducted on a predetermined schedule at seven landfill gas monitoring probe locations, one groundwater monitoring well, and two piezometer wells. At each location a rented Landtec GEM™ 2000 Portable Landfill Gas Analyzer will be used to monitor concentrations of methane, CO2 and O2 in percent by volume and methane in percent LEL. The landfill gas analyzer also measures barometric pressure readings which will be recorded during each monitoring event. Landfill gas monitoring locations are included on Figure 1. A pre-sampling site visit was completed to perform a condition assessment of the probes and wells, to determine equipment needs for completion of the work, and to support development of this site-specific plan. This landfill gas monitoring plan includes methods and procedures for the collection, recoding and documentation of landfill gas concentrations in and around the Estes landfill.

Prior to taking readings at the determined locations we will measure the relative subsurface pressure (RSP) in Inches of Water Column (inWC). All readings will be recorded on pre-printed job specific field forms.

#### **Landfill Gas Probes**

There are seven soil vapor probes that will be monitored; each location consists of a deep probe and a shallow probe. They are labeled PP2, PP3, PP4, PP5, PP6, PP7 and PP9. Each location consists of two three quarter inch pvc pipe lengths that go to certain depths below ground and each has its own surface vault that extends above ground approximately one to four feet. Each pvc pipe has a compression fitting on top which also attaches to a % inch slip cap that has a hose barb threaded into it. The shallow probes range in depth from 6 feet below ground to 7.5 feet below ground. The deep probes range from 8 feet below ground to 21.5 feet below ground. Each probe will first be measured for RSP using a Magnehelic® gauge with a range of zero to one inches of water. The Magnehelic® gauge will be attached to the hose barb on top of the probe. Also, an initial reading of methane, CO2 and O2 will be measured with the landfill gas analyzer attached to the hose barb on the top of the port. One probe volume will then be evacuated at approximately 200 milliters per minute (ml/min) using in house vacuum pump equipment that is attached to the hose barb. The landfill gas analyzer will then be used to monitor the air in the probe. The landfill gas analyzer is equipped with a hose that fits onto the hose barb on the probe and contains its own vacuum pump to pull air through the unit so it can be analyzed. The landfill gas analyzer will remain connected to the probe head for a

CLEAR		050073
CLEAR SCOREEK ASSOCIATES	Page 1	January 24, 2014

minimum of two minutes. If the concentration of methane is still zero after two minutes and CO2 and O2 concentrations are stable (+/- 10% in 30 seconds), monitoring will be discontinued. If the methane readings are rising, or if CO2 and O2 reading are not stable, monitoring will continue until the readings have stabilized.

#### **Piezometers**

Two piezometers in the southern boundary will also be monitored (PZ2 and PZ6). The two piezometers are two inch and four inch respectively. They will be fitted with a slip cap that contains a hose barb for initial readings. Initial readings for RSP, methane, CO2 and O2 will first be taken the same way as with the probes. A ¼ inch tube will then be lowered to the screened interval for each piezometer. PZ2 will be lowered to 45 feet below surface and PZ6 will be lowered to 68 feet below surface. A vacuum pump will be attached to the tubing and evacuate the tubing and surrounding piezometer volume at 200 ml/min for approximately five minutes. The landfill gas analyzer will then be attached to the tubing and measure for methane, Co2 and O2 for at least two minutes or until the readings have stabilized (+/- 10% in 30 seconds).

#### **Groundwater Monitoring Well**

One groundwater monitoring well (EW4) will be monitored. It is located on 40<sup>th</sup> Street southwest of the property. The well is four and one half inch in diameter and contains a pump, drop pipe and fittings at the surface. There is also a one half inch pvc sounding port that will be used for vapor monitoring. The water level in the well is below the screened interval which allows surrounding soil vapor to enter the well for analyzing. It will first be monitored for RSP, methane, CO2 and O2 at the surface of the sounding port. The tubing on the Magnehelic® and the landfill gas analyzer will be lowered into the sounding port approximately 6 inches for these readings. A ¼ inch tube will then be lowered to 75 feet which is the top portion of the screened casing. A vacuum pump will be attached to the tubing and used to evacuate the tubing and surrounding well volume at 200 ml/min for approximately five minutes. The landfill gas analyzer will then be attached to the tubing and measure for methane, Co2 and O2 for at least two minutes or until the readings have stabilized (+/~ 10% in 30 seconds).

CLEAR SCORES ASSOCIATES	Page 2	050073 January 24, 2014
ASSOCIATES		



#### Scottsdale City Attorney's Office

3939 N. Drinkwater Blvd. Scottsdale, AZ 85251 PHONE 480-312-2405 FAX 480-312-2548

#### VIA ELECTRONIC TRANSMISSION AND HAND-DELIVERY

May 4, 2015

Nimeesha B. Lanson Regulatory Compliance Administrator/4150B Arizona Department of Environmental Quality 1110 West Washington Street Phoenix, AZ 85007

Re:

Estes Landfill WQARF Registry Site, Phoenix, Arizona City of Scottsdale A.R.S. §49-287.04 Notice Letter

Dear Ms. Lanson:

The City of Scottsdale (City) is in receipt of your April 2, 2015, letter as to the above matter and hereby submits its responsive comments.

The Estes Landfill WQARF site has been a longstanding matter of which the City first received notice from the Arizona Department of Environmental Quality (ADEQ) fifteen years ago. The City provided its initial 194 page response to ADEQ's Request for Information on September 14, 2000. On February 24, 2003, the City submitted an additional 87 page response to ADEQ's notice that the City had been placed on a preliminary list of potentially responsible parties (PRPs) for the Estes Landfill soils/groundwater contamination pursuant to A.R.S. §49-287.04. All prior City submittals to ADEQ, including City correspondence to ADEQ dated November 21, 2002, are hereby re-asserted and incorporated herein.

#### **ADEQ Theory of City Liability**

The gravamen of ADEQ's theory for again alleging the City might be implicated in the disposal of wastes at the Estes Landfill site has been as follows:

A portion of the waste that was collected (from within the City's limits and pursuant to an agreement with Garbage Service Company) contained hazardous substances, including those generated by Dickson Electronics Corporation (now Microsemi Corporation). During a 6-month period in 1961/1962, all wastes from the City of Scottsdale were disposed of at the Estes Landfill. ADEQ 4/2/2015 notice letter, Attachment A; ADEQ 6/28/2002 notice letter, Attachment A

An (unnamed) former Garbage Service Company route supervisor told our (ADEQ) investigators that for six months in 1961/1962, wastes picked up pursuant to the contract with Scottsdale were taken to the Estes Landfill during times when the other landfill regularly used for disposal was flooded, and wastes taken to the Estes Landfill included waste from Dickson Electronics and Motorola. ADEQ (Smit) letter to Scottsdale, December 20, 2002

#### City's Response to ADEQ's Theory of Scottsdale Liability

The City's position as to ADEQ's theory of imposing liability on the City is as follows (references are to previously submitted City responses and exhibits):

- Prior to May 1, 1961, any Garbage Service Company (Company) services conducted within Scottsdale were pursuant to a "franchise" whereby City residents could arrange for disposal of their wastes at the GSC landfill. Exhibits 16, 18, 22, 23
- From the time the Company first began providing service to Scottsdale, all municipal waste was delivered to either of two landfills located on the Salt River. Exhibit 7
- As of 1961, the Company had leased landfill space on private land owned by Hal Adams and on the Salt River Pima- Maricopa Indian Community reservation. Exhibits 6, 27, 28, 34
- The Hal Adams landfill site was located 2 ½ miles south of McDowell Road and ½ mile east of Hayden Road. Exhibits 27, 34
- The SRP-MIC landfill site was located south of McDowell Road at Country Club Drive. Exhibits 7, 8
- On May 1, 1961, the City entered into two contracts with the Company, one of which was for landfill services. Exhibit 26
- The 1961 contract specified the Company was required to provide a landfill within three miles of the City's municipal boundaries as a local convenience for the City's residential customers' use. Exhibits 6, 26, 27
- The Company arranged for commercial waste services with private businesses (such as Motorola, Dickson Electronics, and Microsemi Corporation) pursuant to "individual commercial accounts." Exhibit 6
- As of November, 1961, the landfill identified for the Company's services was the facility located on the bank of the Salt River, 2 ½ miles south of McDowell Road and ½ mile east of Hayden Road. Exhibit 27
- The City's landfill contract with the Company terminated no later than 1964.
- Except for a brief instance sometime between 1979-1981 when the Salt River flooded and trucks were not able to reach the regularly used landfill, residential waste was taken to a Tempe recycling plant located near 1<sup>st</sup> Street and Hayden Road, south of the Salt River. Exhibits 7, 8
- The peak flow on the Salt River in 1961 was 2,210 cubic feet/second (CFS). Exhibit 35
- The peak flow on the Salt River in 1962 was 2,320 CFS. Exhibit 35
- From 1950 through 1962, annual peak flows on the Salt River averaged 2,627 CFS. Exhibit 35
- Peak flows on the Salt River exceeded 30,000 CFS on January 1, 1966 (38,600 CFS), January 19, 1979 (54,000 CFS), February 16, 1980 (64,000 CFS), October 2, 1984 (33,300 CFS), and January 20, 1993 (34,500 CFS). Exhibit 35

#### Discussion

The City does not dispute that, as of May 1, 1961, it had a landfill agreement with Garbage Service Company (Company). Exhibit 26. As stated in the first recital to that agreement, the City desired to furnish sanitary landfill services for the convenience of its residents within three miles of the City's

limits. And, as stated in the second recital, the Company was leasing a landfill "dump" site just south of the City's limits. The minutes of a November 28, 1961, City Council meeting mention City residents could dispose of their waste at the landfill located 2 ½ miles south of McDowell and ½ mile east of Hayden Road. Exhibit 27. The minutes of a January 16, 1962, City Council meeting mention the entranceway of the landfill was at an intersection with Hayden Road. Exhibit 28. Clearly, the landfill agreement was intended for City residents to dispose of residential waste at a local facility located near the City's municipal limits.

Exhibit 6, the September 21, 1962, deposition transcript of the landfill manager, Lawrence Redman, is noteworthy. The deposition testimony, taken 19 months after the 5/1/1961 contract was effective, made clear that at that time: (a) the Company had leased land from the SRP-MIC Tribal Council for purposes of the Company's landfill contract with the City; (b) ninety-six per cent of the landfill was primarily used "for the purpose of dumping Scottsdale's refuse and serving the citizens of Scottsdale as provided by the contract;" and (c) the remaining four percent of the landfill was used for commercial waste generated from within the City's limits. Interestingly, the deponent made *no* mention that any landfill operated by the Company had either been flooded or was unsuitable for accepting waste at any time because of flooding.

Significantly, Exhibit 6 also makes clear the Company had 60-65 "individual commercial accounts" with Scottsdale businesses for waste disposal. Therefore, to the extent the Estes Landfill site is related to the disposal of hazardous contaminants generated by private businesses such as Dickson Electronics, Microsemi, or Motorola, these commercial ventures made their own, separate disposal arrangements with the Company.

As a final point, the City submitted to ADEQ the written report of a former Arizona State University Professor of Geography which concluded flooding did not occur on the Salt River in 1961 or 1962. Exhibits 36, 37. Consequently, a purported six (6) month disruption of any East Valley landfill operation located near the Salt River due to flooding in 1961 or 1962 is virtually, if not certainly, impossible.

#### Allocation

Consistent with all prior City correspondence to ADEQ as to this matter, the City maintains any allocation of liability should be solely among other individuals, entities, or identified PRPs which actually arranged for the disposal of waste at the Estes Landfill, transported waste to the site, or owned or operated the facility during its twenty years of operation. The City has uncovered *no* evidence that even suggests waste from Scottsdale through its agreements with Garbage Service Company may have been delivered to the Estes site at any time or for any reason.

#### Potentially Responsible Parties

ADEQ's April 2, 2015 letter, advised that the City had been placed on a "Preliminary List" of PRPs for the Estes Landfill WQARF site. Aside from correcting a single typographical error, this preliminary list of twenty-two (22) PRPs is identical to the 2002 list of Preliminary PRPs. The City understands, however, that no less than nine of the listed PRPs have previously settled their claims. In order to reasonably assess any possible allocation of liability among any other parties, the City would first require all current information as to the status of all previously identified PRPs and whether any such PRPs are deceased, bankrupt, or have approved settlements. Furthermore, no City assessment of liability allocation

can be undertaken without confirmation as to whether the claimed amounts for monitoring the natural attenuation remedy and/or ADEQ's recoverable costs will be allocated among all PRPs, including those parties which may have reached settlements.

Aside from the limited preliminary list of PRPs, ADEQ earlier advised the City that more than 12,000 companies had been identified as part of the site investigation. October 10, 2000, ADEQ (McNeely) letter to the City. Allocation consideration should also be made as to the 137 entities identified in "Attachment 1" to various consent decrees between the state and settling parties. The City would better understand its designation as a PRP if ADEQ would provide a full explanation as to how thousands of potentially implicated parties were reduced to a handful of PRPs expected to share the costs of investigation and remediation.

#### The City is not an "arranger" as defined in A.R.S. §49-283(A)(2).

The City emphatically reasserts its prior argument in opposition to ADEQ's allegation that the City is an "arranger" pursuant to A.R.S. §49-283(A)(2). February 24, 2003, City response to ADEQ at pages 4-5. The City continues to maintain none of the wastes generated by Dickson Electronics, Microsemi Corporation, Siemens Corporation, Motorola, or any other commercial operation was ever owned or possessed by the City. Again, each commercial entity had its own individual account with the Company and thereby arranged for disposal services for its waste.

#### Local Groundwater Contamination Costs

The City reasserts those points made in its February 24, 2003, response to ADEQ as to local groundwater contamination within the North Indian Bend Wash CERCLA site. The historical local disposal practices of Dickson Electronics and its successors (Siemens Corporation/SMI Holding LLC and Microsemi Corporation), Motorola, and others have significantly compromised groundwater quality in and around Scottsdale. As noted previously, the City continues to expend resources to repair and maintain extraction wells required to effectuate the NIBW remedy.

Only recently, City monitoring data indicated the presence of 1,4-dioxane in its groundwater. The highest concentration of 1,4-dioxane, a stabilizer for chlorinated solvents such as 1,1,1, trichloroethane (TCA), one of the NIBW contaminants of concern, was detected at a well which is part of the NIBW remedy extraction well system. As a result, City staff is now taking even further measures to monitor the quality of its treated drinking water and to assure potable water deliveries are safe and within regulatory limits for yet another contaminant. This development underscores the City's ongoing efforts to address the past *local* disposal practices of the NIBW PRPs. The City should not be directed to assume liability at the Estes site for the *remote* disposal of wastes by the same NIBW PRPs.

#### ADEQ Records

Following the undersigned's public records request to the ADEQ Records Management Center, ADEQ provided the WQARF Project File Index for the Estes Landfill (E-5161.01/RIMS#1-17399), revised August 17, 2004, and a ten (10) page AZURITE SITES Document Rollup index. On April 29, 2015, and relying on these two indices, I reviewed those records ADEQ produced in response to my public records

request. Of particular note, I was provided files which had not been identified on either file index. For instance, a folder marked "8.5.5.2 Best Settlement Offers" contained settlement offers dated in 2002 and directed to no less than eleven parties. However, no files numbered "8.5.5," "8.5.5.1," or "8.5.5.2" appear on either index although ADEO staff confirmed the RIMS#1-17399 and Rollup indices are the only current Estes file indices.

Also, even though I had specifically requested "All correspondence between the City of Scottsdale and ADEQ (2000-2015)," no other correspondence from ADEQ to the City or from the City to ADEQ was produced. The City will continue to have difficulty in assessing its involvement at the Estes site, if any, or the involvement of other parties in this matter unless and until the City is provided (1) an accurate and comprehensive Estes Site file index, and (2) a reasonable opportunity to review ADEO's complete records file of the Estes site.

At this time, the City does not deem an evaluation of the proposed Remedial Action Plan or ADEQ's cost documentation to be useful and provides no comment as to same.

The City again asserts none of the Estes Landfill remediation costs should be allocated to the City.

Very truly yours.

Steven B. Bennett Deputy City Attorney

C: Bruce Washburn, City Attorney

Frank Moreno, Director, Solid Waste Management

Brian K. Biesemeyer, Director, Water Resources

Jeffrey D. Cantrell, Office of the Arizona Attorney General

#### GAMMAGE & BURNHAM, PLC

ATTORNEYS AT LAW

# TWO NORTH CENTRAL AVENUE FIFTEENTH FLOOR PHOENIX, ARIZONA 85004-4470

TELEPHONE (602) 256-0566 FACSIMILE (602) 256-4475

WRITERS DIRECT LINE

May 4, 2015

Michelle A. De Blasi mdeblasi@gblaw.com

(602) 256-4419

Via U.S. Mail and email to lanson.nimeesha@azdeq.gov

Nimeesha B. Lanson Regulatory Compliance Administrator/4150B Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, Arizona 85007

Re:

Response to Notice Letter Pursuant to A.R.S. § 49-287.04

Estes Landfill WQARF Registry Site, Phoenix, Arizona

Dear Ms. Lanson:

I have been engaged to respond to your letter dated April 2, 2015 regarding the above-referenced matter. In the Preliminary List of Potentially Responsible Parties attached to the letter, Arizona Department of Environmental Quality (ADEQ) alleges that Arizona Service Company is liable as a transporter.

This letter serves as notice that Arizona Service Company ceased to exist as of November 3, 1965, as reflected in the attached documents. The record shows that the company was dissolved under corporate resolution. We have not identified any living principals, or any evidence that there are any remaining shareholders. As a result, there cannot be an allocation of liability to Arizona Service Company because it no longer exists. As a "dead and buried" company, there would also be a statute of limitations time bar for allocating liability. Furthermore, we have not identified any evidence indicating that Arizona Service Company "either selected the facility to which [waste containing the hazardous substance] was transported or disposed of it in a manner contrary to law" as required to incur transporter liability under A.R.S. § 49-283(A)(3).

Unless ADEQ has additional evidence to the contrary, there is no existing company to allocate liability or to provide comments on the Proposed Remedial Action Plan. Please provide any information to the contrary as soon as possible.

Very truly yours,

GAMMAGE & BURNHAM, PLC

Welle Do Born

By:

Michelle A. De Blasi

Enclosure









# Office of the CORPORATION COMMISSION

TO ALL TO WHOM THESE PRESENTS SHALL COME, GREETING:

THE EXECUTIVE DIRECTOR OF THE ARIZONA CORPORATION COMMISSION DOES HEREBY CERTIFY THAT THE RECORDS IN THIS OFFICE SHOW:

## ARIZONA SERVICE COMPANY

UPON INFORMATION AND BELIEF, WAS INCORPORATED ON THE 09<sup>TH</sup> DAY OF APRIL, 1947.

I FURTHER CERTIFY THAT THE ABOVE NAMED CORPORATION WAS REVOKED ON THE 03rd DAY OF NOVEMBER, 1965, AS PROVIDED BY LAW.



IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Arizona Corporation Commission. Done at Phoenix, Capital, this 17 Day of April, 2015 A.D.

A. Jerich, Executive Director

By: Maryhel Bair

20 shares \$5,000 each Capitalization \$100,000 12 of Pub. 5-16-4,

LAW OFFICES

# JORDEN BISCHOFF & HISER, P.L.C.

7272 E. Indian School Road, Suite 360 Scottsdale, Arizona 85251 Telephone: 480-505-3900 Facsimile: 480-505-3901

#### **MATTHEW JOY**

DIRECT LINE: 480-505-3928 e-mail: mjoy@jordenbischoff.com

April 29, 2015

### Via Overnight Delivery

Mr. Jeffrey D. Cantrell Assistant Attorney General Office of the Attorney General 1275 West Washington Street Phoenix, Arizona 85007



Dear Mr. Cantrell:

This letter is in response to the Arizona Department of Environmental Quality's (ADEQ's) Notice Letter regarding the Estes Landfill WQARF Registry Site, dated April 2, 2015 and addressed to John W. and Virginia L. Lattimore care of Cheryl L. Wamsley. In that letter, ADEQ states that John W. and Virginia L. Lattimore have been placed on the list of potentially responsible parties (PRPs) for alleged contamination at the Estes Landfill. We have been asked by the descendants of Mr. and Mrs. Lattimore to respond.

As you are aware, Mr. Lattimore and Mrs. Lattimore are both deceased. Even if there were any liability attached to Mr. or Mrs. Lattimore (which we do not concede), any such liability would attach only to them. None of their descendants have ever in any way owned or operated the Estes landfill. Hence, the descendants are not liable for any response costs for alleged contamination at the landfill.

Further, ADEQ has no claim against any estate (which was concluded a number of years ago) left to the descendants. For the same reasons set forth in the letter from Mr. Charles Bischoff to Mr. Martin Jones, dated April 15, 2003, ADEQ long ago either waived any claim against any estate or never had any claim in the first instance (a copy of that letter is attached). Among many other reasons, pursuant to A.R.S. § 14-3803(C), ADEQ cannot, years after their deaths, seek response costs from any estate left by Mr. or Mrs. Lattimore. The time for any such claims has long since passed.



Letter to Mr. Jeffrey Cantrell Estes Landfill WQARF Registry Site, Phoenix, Arizona April 29, 2015 Page 2 of 2

In short, the descendants of Mr. and Mrs. Lattimore have no liability for response costs for alleged contamination at the Estes Landfill. The descendants of Mr. and Mrs. Lattimore reserve all rights and defenses available to them. If you have any information to the contrary, please provide it to us and we will consider it. Please call me with any questions.

Sincerely,

Matthew Joy

Attachment

Cc: Nimeesha B. Lanson

**ADEQ** 

RE:

Notice Letter Pursuant to A.R.S. 49-287.04 Estes Landfill WQARF Registry Site, Phoenix, Arizona.

Dear Nimeesha B. Lanson:



I am writing this letter on behalf of Phillip G. Estes and Edward S. Estes as well as myself.

The property to which you refer, the Estes Landfill, was not in our possession from July 16, 1969 through Sept. 15, 1973. It was part of the estate of Wilbur Calvin Estes.

That landfill, which was closed at the time, was being managed and administered by Valley National Bank, under the trusteeship of Mary R. Estes. Before that time, the land was under the trusteeship of Mary R. Estes and the estate's lawyers for Wilbur Calvin Estes. Valley National Bank was acting as the personal representative of Wilbur Calvin Estes.

At the time mentioned, I was in high school at the time, while Phillip was serving in the U.S. Air Force and Edward was in college and serving in the National Guard. None of us were in a position to maintain ownership or oversight of the land. Simply put, we never had outright possession of the property you mention.

Since the landfill was closed, and we had no oversight for it, we respectfully challenge our designation as "owner" of the site during this time. We also had no contact or agreement whatsoever with Fred's Pumping Service, or with any of the transporters mentioned.

Mark (1.)

Respectfully submitted,

Mark W. Estes,

On behalf of Phillip G. Estes and Edward S. Estes



Mail Station PAB340 P.O. Box 52025 Phoenix, AZ 85072-2025 Phone: (602) 236-2599 Fax: (602) 236-2170 Mobile: (602) 326-2123 mark.estes@srpnet.com

Mark W. Estes, ABC
Senior Communications
Strategist
Corporate Communications

Elias M. Romley 1 ROMLEY & SHERK 2 320 East Virginia Avenue Phoenix, Arizona 85004 3 266-4900 (602)4 Attorneys for Mary Rose Estes, Trustee 5 6 7 8 THE SUPERIOR COURT OF ARIZONA 9 MARICOPA COUNTY 10 In the Matter of the Estate 11 of 12 No. P 65375 WILBUR CALVIN ESTES, 13 14 Deceased. 15 16 PETITION FOR REMOVAL OF PERSONAL REPRESENTATIVE 17 18 19 20

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PHILLIP G. ESTES, EDWARD S. ESTES and MARK WAYNE ESTES, the only residuary beneficiaries under the Last Will and Testament of Wilbur Calvin Estes ("decedent"), and MARY ROSE ESTES, Trustee under a Trust Agreement for said beneficiaries executed September 15, 1973 by said beneficiaries as Trustors and by Mary Rose Estes as Trustee, hereby petition the above-entitled Court for removal of The Valley National Bank of Arizona ("Bank"), Personal Representative of the Estate of Wilbur Calvin Estes, Deceased; and, as grounds for and in support of said Petition, they allege as follows:

- 1. The removal of said Bank as Personal Representative would be in the best interests of the decedent's estate and of the beneficiaries thereof.
  - 2. The Bank has mismanaged the estate.
- 3. The Bank's actions as Personal Representative did not benefit the estate, have been detrimental to said estate and the beneficiaries thereof, and many of its actions were in furtherance of its personal interest rather than in furtherance of the interests of the estate and its beneficiaries.
- 4. Mary Rose Estes qualifies under the laws of Arizona to be the Successor-Personal Representative of decedent's estate.

WHEREFORE, Petitioners above-named respectfully petition the Court for removal of The Valley National Bank of Arizona as Personal Representative of the Estate of Wilbur Calvin Estes, Deceased, for the appointment of Mary Rose Estes as Successor-Personal Representative, and for the entry herein of such further orders as to the Court shall appear meet and proper in the premises.

DATED February 22, 1983.

ROMLEY & SHERK

Attorneys for Mary Rose Est

Trustee

In Pro Per.

# MEMORANDUM OF POINTS AND AUTHORITIES 1. A.R.S. § 14-3611. 2. Matter of Estate of Estes, \_\_\_\_, 654 P.2d 4 (1982) (copy of Opinion attached). The records and files in the following actions: No. P 65375: In the Matter of the Estate of Wilbur Calvin Estes, Deceased. No. 426433: City of Phoenix v. Mary Rose Estes, a Trustee; Valley National Bank of Arizona, a Trustee; et al. Respectfully Submitted, ROMLEY & SHERK Attorneys for Mary Rose Est Trustee

from Mark Estes

Nimeesha B. Lanson 1110 W. Washington St.



RE:

Notice Letter Pursuant to A.R.S. 49-287.04

Estes Landfill WQARF Registry Site, Phoenix, Arizona.



Dear Nimeesha B. Lanson:

I am writing this letter on behalf of Phillip G. Estes and Edward S. Estes as well as myself. This is a follow-up note to my letter of May 4, 2015.

Upon further research of the status of the Estes Landfill, I have found two samples of evidence that the Valley National Bank of Arizona held legal title to the property in question from 1966 through 1982.

- The first document is located on the Arizona Department of Environmental Quality, website. Please refer to "ESTES LANDFILL RI/FS," 1.2 Ownership and Use History.
- The second was found on Leagle.com. It is a copy of the report and judgment of the City of Phoenix, Ariz v. Garbage Service Co; et al. The case was heard in the U.S. District Court of Arizona.

On the third page, please note the following:

"The court holds that VNB, as trustee of Mr. Estes' estate, held legal title to the Landfill. For the reasons set forth above, that makes VNB liable as "owner" of the Landfill..."

To repeat my earlier position, the property was not in the possession of Philip G., Edward S. and/or Mark W. Estes. Valley National Bank of Arizona held legal title, as stated by the U.S. District Court and by evidence provided on ADEQ's website.

In conclusion, my brothers and I were never "owners" as ADEQ has listed on A-2 in "Preliminary List of Potentially Responsible Parties, Estes Landfill WQARF site, Phoenix, Arizona."

Mark W. 25

Respectfully submitted,

Mark W. Estes,

On behalf of Phillip G. Estes and Edward S. Estes

.attachments

# ESTES LANDFILL RI/FS

REMEDIAL INVESTIGATION REPORT

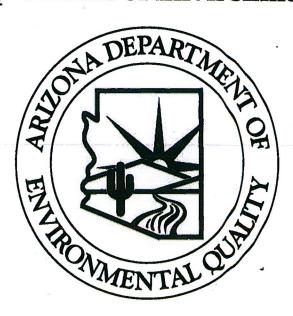


Volume I of V

Text, Tables, Figures & Appendix A - J

Prepared for

**Arizona Department of Environmental Quality** 



By



# ESTES LANDFILL RI/FS

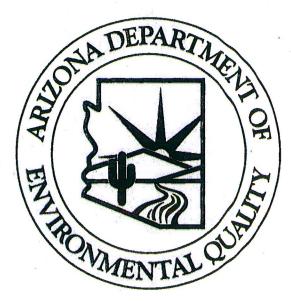
REMEDIAL INVESTIGATION REPORT

Volume I of V
Text, Tables, Figures & Appendix A - J

A-B-C

Prepared for

Arizona Department of Environmental Quality



By



# Estes Landfill RI/FS Remedial Investigation Final Report

Prepared for

Arizona Department of Environmental Quality

ESE Project No. 6699030

Report Prepared By:

John S. Kim Chief Engineer 7/30/99 Date

the C

John C. Mieher, R.G. Senior Geologist 7/3 8 /9 9 Date

Report Quality Control Reviewer

Steve A. Willis, R.G.

50-59

Senior Geologist

Date'

July 30, 1999

#### DISTRIBUTION

Estes Landfill RI/FS Remedial Investigation Final Report

- A. City Aviation Department
  Contact: Jim Kudlinski
  2 Copies per Consent Decree
- B. City of Phoenix Environmental Programs
  Contact: Karen O'Regan
  1 Copy
- C. Arizona Department of Environmental Quality
  Contact: Nancy Nesky
  6 Copies

#### **ACKNOWLEDGMENTS**

This report presents the results of the Remedial Investigation (RI) portion of the RI/Feasibility Study (RI/FS) conducted at the Estes Landfill (Estes). This report was modified by Environmental Science and Engineering, Inc. (ESE), formerly known as QST Environmental, Inc. (QST), from the September 5, 1997 "Estes Landfill RI/FS RI Draft Report" prepared by Harding Lawson Associates (HLA) for the City of Phoenix (City) and Bank One Arizona, N.A. (Bank One). This report was generated under the direction of ADEQ, and summarizes the investigations, results and conclusions of previous RI performed at Estes by HLA and other consultants and contractors. In addition, this report summarizes more current RI results and conclusions from additional investigative data that was obtained and/or collected after the date of the draft RI report. All work has been conducted in substantial compliance with the National Contingency Plan (NCP), promulgated pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), and the Arizona Water Quality Assurance Revolving Fund (WQARF).

NOTE: groundwater sample analytical reporting by HLA in the Phase I Groundwater Quality Investigation (GQI) Report (September 19, 1990) did not differentiate between cis- and trans-1,2-Dichloroethene(DCE).

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#### **EXECUTIVE SUMMARY**

#### Introduction

This report presents the results of the Remedial Investigation (RI) portion of the RI/Feasibility Study (RI/FS) conducted at the Estes Landfill (Estes). This report was modified by Environmental Science and Engineering, Inc. (ESE), formerly known as QST Environmental, Inc. (QST), from the September 5, 1997 "Estes Landfill RI/FS RI Draft Report" prepared by Harding Lawson Associates (HLA) for the City of Phoenix (City) and Bank One Arizona, N.A. (Bank One). This report was generated under the direction of ADEQ, and summarizes the investigations, results and conclusions of previous RI performed at Estes by HLA and other consultants and contractors. In addition, this report summarizes more current RI results and conclusions from additional investigative data that was obtained and/or collected after the date of the draft RI report. All work has been conducted in substantial compliance with the National Contingency Plan (NCP), promulgated pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund), and the Arizona Water Quality Assurance Revolving Fund (WOARF).

#### Location

The Estes Landfill is presently located adjacent to and south of the Salt River between 40th and 45th Streets in Phoenix, Arizona (Figure 1.1). The Estes Landfill study area is shown in Figure 1.2. The study area includes a network of groundwater monitor wells that extends beyond the portion of the aquifer, which is impacted by the Site. The Estes Landfill was privately owned and operated from the early 1950s until 1972, when it was permanently closed to landfill operations. Neither the City nor Bank One operated the Landfill. The Bradley, or Fortieth Street Landfill, a newer landfill which is also privately owned and operated, lies south of the Estes Landfill. The two are separated by a 50-foot east/west utility easement.

#### Background

In 1978, 1979 and 1980, flooding along the Salt River caused substantial damage to both public and private property along the river, including the Phoenix Sky Harbor International Airport. As a result, the City, in conjunction with local, State and Federal flood control and transportation agencies, developed a program of river channelization and bank stabilization. In order to complete the project, a large portion of the Estes Landfill that was located in the riverbed

needed to be relocated. In 1982, the City acquired the Estes Landfill through eminent domain to complete this joint project.

Between 1980 and 1982, groundwater contamination was discovered in two industrial water supply wells; one located on the Bradley Landfill, and one located on the former Tanner property west of 40th Street. The primary contaminants detected were 1,2-dichloroethene (1,2-DCE) and vinyl chloride (VC), which are degradation byproducts of the industrial solvent trichloroethene (TCE). Lower concentrations of other volatile organic compounds (VOCs) and metals were also detected. Groundwater sampling of eight monitor wells, four on the Estes Landfill and four on the Bradley Landfill, conducted by the Arizona Department of Health Services (ADHS) through the mid 1980s, confirmed the presence of groundwater contamination in the area. The greatest concentrations of VOCs were detected in monitor well EW-E, located near a former liquid waste disposal pit on the Estes Landfill.

Since 1987, the City has conducted several phases of remedial investigation, with oversight from ADEQ. Since 1993, Bank One has participated in the investigation. Technical activities have included: the drilling and installation of numerous groundwater monitor wells and piezometers; the collection of hundreds of soil and groundwater samples and thousands of water level measurements; the completion of soil gas surveys, geophysical surveys and several aquifer tests; and the performance of both bench scale and pilot scale treatability tests. Two comprehensive Groundwater Quality Investigation (GQI) reports as well as multiple technical and project related documents have been prepared for the City and approved by ADEQ. This high level of technical activity and resulting data allowed for the development of a detailed Site Conceptual Model (SCM) that was presented in the Draft RI report.

After the submittal of the September 5, 1997, RI Draft Report to the ADEQ, on February 25, 1999, ADEQ provided written comments to the Draft RI report to the City based on a technical review of the draft document performed by ADEQ and ESE. The major comments requested additional investigation to identify other potential sources of VOCs within the former and current landfill, and to determine the lateral and vertical extent of impacted groundwater. In addition, further assessment of the production of methane gas was also requested, along with further evaluation of soil and groundwater components that would support the natural attenuation claim made in the

Draft RI report. Based on the comments provided, ADEQ retained ESE to complete the additional RI activities to address the major concerns and to finalize the RI report.

ESE's modification of this report was based on multiple sources, including the City's and HLA's response to comments provided in the February 25, 1999, letter, and additional information that was obtained from data collected by ESE from the most recent RI field activity conducted from May through June 1999. Other activities conducted as part of this investigation included: performing an ecological screening to determine if an ecological assessment would be required; geophysical screening of the landfill; downhole geophysical logging of the deepest groundwater monitoring well installed by ESE; and an evaluation of the integrity of the existing landfill cover.

The results of the 1999 investigation allowed ESE to refine the SCM in the draft RI. The Site Conceptual Model is a detailed working hypothesis of the geology and hydrogeology and how these are interrelated with the fate and transport of contaminants associated with past disposal practices at the Site. The major components of that SCM are described in detail throughout the RI report. A summary is provided below.

#### **Hydrogeology**

The Site is underlain by 115 to 175 feet of heterogeneous alluvial sediments followed by several hundred feet of consolidated sedimentary bedrock. The major hydrologic feature in the study area is the Salt River immediately adjacent to the Site. The Salt River is normally dry, but during periods with above average precipitation, releases from upstream reservoirs have caused flows to occur that have exceeded 100,000 cubic feet per second (cfs). These river flows cause rapid recharge to the underlying aquifer.

Groundwater generally occurs under unconfined conditions, with localized exceptions. Groundwater flow is generally west during no river flow and southwest during large river flow events. Water levels fluctuate between 25 and 65 feet below ground surface (bgs) beneath the Site and are significantly impacted by river flow. These dynamic groundwater conditions create a complex flow regime that alters the advective transport of groundwater contaminants.

The alluvium beneath the Site contains sediments of similar composition with differing hydraulic properties, which result from differences in the degree of sorting of the sediments. Therefore, for the purposes of this RI, three distinct alluvial hydrostratigraphic units have been designated, in descending order from surface, as units F1, F2, and F3. The differences in sorting are related to variations in the fluvial depositional environments of the sediments. The F1 unit is composed of cobbles, gravel, sand and some fines and, when saturated, is considered a highly permeable unconfined alluvial aquifer above approximately 60 feet bgs. The hydraulic conductivity of unit F1 is calculated to be 2x10<sup>-1</sup> centimeters per second (cm/sec) (HLA, 1992c and HLA, 1992d). The F2 unit is also composed of cobbles, gravel, sand and silt with some clay and is considered a semi-confined alluvial aquitard between approximately 60 to 90 feet bgs with very low primary permeability. The hydraulic conductivity of unit F2 is calculated to be 1x10<sup>-7</sup> cm/sec. The F3 unit is composed of the same fluvial material as units F1 and F2, but is considered a moderately permeable, semi-confined alluvial aquifer between the base of unit F2 and the underlying sedimentary bedrock. The hydraulic conductivity of unit F3 is calculated to be 2.5x10<sup>-2</sup> cm/sec (HLA, 1992c).

The sedimentary bedrock, also referred to as unit F4 in the SCM, is well-consolidated and appears to correlate with the Tertiary Tempe Beds. The hydraulic conductivity of unit F4 is calculated to be  $4\times10^{-6}$  cm/sec (HLA, 1992c). Contacts between the three alluvial units are gradational, whereas, the alluvial/bedrock contact is readily apparent. Unit F2 is not continuous throughout the study area. Where unit F2 is absent, units F1 and F3 are considered to be one unconfined alluvial aquifer.

#### **Groundwater VOC Plumes**

In the vicinity of the Site, two plumes of dissolved VOCs in groundwater have been identified through the evaluation of groundwater quality data. One plume is located onsite and generally defined as the Estes Landfill Site, as shown on the ADEQ WQARF Registry Map (Figure 1.2). The other plume is located to the south and southwest of the Estes Landfill.

The Site plume is suspected of originating from an onsite former liquid waste disposal pit (primary source).

Dissolved concentrations of VC, cis-1,2-DCE, TCE, and other VOCs in groundwater define this plume. The south plume is defined by dissolved concentrations of TCE, 1,1-DCE, and other VOCs in the groundwater.

At the onsite source, releases of solvent waste such as TCE probably occurred. This waste TCE was likely mixed with other liquid wastes including septage, greases, and waste oils. The precise quantities, character and nature of the liquid wastes are unknown, although considerable historic evidence confirms solvent disposal in the source area. The primary contaminant migration pathway included infiltration of the mixed wastes and solvents through the bottom of the pit, and then percolation through the underlying unsaturated zone to the aquifer. The parent solvent, TCE, has subsequently been degraded to cis-1,2-DCE and VC. There are no indications of the existence of DNAPLs at the Site. Where detected, TCE makes up less than 1% of the total mass of contaminants.

Concentrations of dissolved cis-1,2-DCE are generally less than 0.1% of its respective solubility, and VC exists as a gas at the pressures and temperatures found at the Site.

#### **Landfill Soil Conditions**

Metals in the form of Aresenic and Thallium were present in both the former landfill and the western and central portions of the existing landfill that exceeded their appropriate action level. In addition, Lead was present in the eastern portion of the existing landfill that also exceeded the SRL. Because these metals are present in subsurface soils, direct human exposure is not a concern at this time. However, the potential of these metals to leachate into the groundwater, and potential future exposure during site redevelopment are of concern. Consequently, further evaluation on the potential risks to human health and the environment of these metals present in the subsurface soils will have to be conducted in the form of a risk assessment.

#### **Landfill Methane Production**

Based on comparing methane results of all three rounds, there is no apparent trend of methane production. However, it has been concluded that the highest concentrations of methane production are within the relocated portions of the landfill. It has also been established that methane is not migrating west or east offsite. In addition, the presence of

methane and methane production along the southern portion of the landfill is likely influenced by the presence of the Bradley Landfill, which is also a source of methane. The current concentrations of methane could create explosive conditions if low-lying areas or enclosed structure were present. However, because these types of site conditions are not present explosion potential due to build up of methane is currently not an issue. Should future site redevelopment be planned which includes the construction of enclosed structures, the potential of methane creating an explosive condition would be an issue of concern. Consequently, methods to recover methane in landfills should be evaluated during the performance of the FS.

#### **Groundwater Chemistry**

VC, TCE, cis-1,2-dichloroethene (cis-1,2-DCE) are signature chemicals for the Site, and accordingly, were used to define the extent of impacts to groundwater. The lateral and vertical extent of contamination from the Site is relatively stable as evidenced from nearly seven years of groundwater monitoring. The limiting factor in this contaminant migration is the rate at which these dissolved phase breakdown products diffuse from unit F2.

The groundwater plume from the Site is stable and not migrating. A review of over seven years of groundwater analytical data indicate that the western or downgradient lateral extent of the plume is defined by wells EW-1 and EW-12. Concentrations of VC and cis-1,2-DCE in groundwater samples collected from both of these wells have been very low to below detection, regardless of river flow conditions. To the south and southwest, the lateral extent fluctuates a few hundred feet in response to river flow. However, the southern lateral extent is generally defined by wells north of University Drive, in particular Wells BW-SD and EW-14. The northern/northwestern lateral extent is characterized by groundwater data from Wells EW-9, EW-11, EW-22, and newly installed Wells EW-23 and EW-24. Based on recent data from these wells, there appears to be a northwest migration component to the primary signature compounds from the Estes Landfill. June 1999 concentrations of VC at Wells EW-22 (2.7 µg/l) and EW-23 (12 µg/l), northwesternmost wells, were above the ADEQ AWQSs.

Based on inferred westerly to southwesterly groundwater flow in the area of the Estes Landfill, Wells EW-NE and EW-3 are upgradient of the inferred source of VOC contaminants identified at the Site. No VOCs have been

reported in groundwater samples at these wells, which were initially sampled in September 1988 and June 1989, respectively. It can therefore be inferred that no VOC contaminants have migrated onto the Site from an upgradient source. Based on inferred westerly to southwesterly groundwater flow indicated since groundwater monitoring began at Estes Landfill, the Bradley Landfill is downgradient to cross-gradient of the Estes Landfill. Based on these inferred groundwater flow conditions, it is not likely that any potential VOCs in groundwater from the Bradley Landfill have migrated north onto the Estes Landfill boundary.

The vertical extent of groundwater contamination is generally limited to the alluvial hydrostratigraphic units F1, F2 and F3. Three wells have been completed in the bedrock and geologic coring was completed at a number of locations. Both VC and cis-1,2-DCE have been detected in groundwater samples collected from the unit F4 monitoring well EW-15, located near the source area. Only cis-1,2-DCE was detected in the June 1999 groundwater sample collected at Well EW-26, also located near the source area, but screened approximately 100 feet deeper than EW-15. VC and cis-1,2-DCE have not been detected, or have been detected at concentrations less than 1 ug/l, in groundwater samples collected from the downgradient F4 monitoring well EW-8. Given the hydrogeologic characteristics of F4 and the lack of groundwater contamination at the downgradient location, the vertical extent appears to be limited.

Contaminant concentrations in groundwater decline over time and with distance from the source area. Since the last major river flow event in 1993, concentrations have declined up to two orders of magnitude at some locations. It was noted that during large river flow events, groundwater concentrations of VC tend to spike near the source area. This concentration spike is immediately followed by a rapid decline. These spikes do not appear to affect the lateral extent of groundwater contamination over either the short or long term. From the source area to the western edge of the landfill, approximately 1,700 feet, groundwater concentrations generally decline by about two orders of magnitude. Groundwater concentrations of VC and DCE decline another order of magnitude to generally below detection in an additional 1,600 feet from the western edge of the Site.

The two primary mechanisms controlling the attenuation of VOCs at the Site are physical and biological. The main physical attenuation mechanisms are dissolution and advection. Dissolution occurs primarily in F2 beneath the source and results in the creation of highly contaminated groundwater. This highly contaminated groundwater slowly migrates vertically to the more permeable adjacent units F1 and F3, where it can migrate laterally via advective transport. During periods of river flow, rapid recharge causes hydraulic loading and upsets the established equilibrium. This effect contributes to the observed VC and DCE concentration spikes at source area wells during or immediately after a major river flow event.

An evaluation of concentration spikes over time indicates that the magnitude of the spikes is declining as a result of the reduction in contaminant mass in unit F2. In addition, after a spike event occurs, the concentrations rapidly decline to pre-spike levels or lower. The attenuation mechanism responsible for the rapid decline in concentrations appears to be primarily related to the presence of a unique set of environmental conditions that creates a sequential anaerobic/aerobic groundwater system. Strong evidence of the natural attenuation of TCE, cis-1,2-DCE, and VC through biodegradation is present at the Site.

Natural attenuation of TCE, cis-1,2-DCE, and to a limited extent, VC, is occurring at the Site. The presence of biologically-formed cis-1,2-DCE (daughter product of TCE) and VC (daughter product of the biodegradation of DCE) suggests that microbial reductive dechlorination is occurring at the Estes Landfill. In addition, supporting data have shown that appropriate geochemical conditions exist for reductive dechlorination to occur, especially near the source area.

However, daughter products of vinyl chloride, such as ethane and ethene, while detected at the site, do not occur in significant concentrations to suggest that vinyl chloride is being reductively dechlorinated, nor are the concentrations of chloride and carbon dioxide (ultimate end products in the mineralization of VC) significantly above background levels to indicate that VC mineralization is occuring. An alternative explanation for the lack of VC accumulation in the system may be other biodegradation mechanisms, such as direct oxidation or cometabolism

with a primary organic substrate. At this time, insufficient evidence is available to conclusively determine the exact mechanism acting on VC to reduce concentrations over time.

#### Risk Assessment

Two risk assessments (RAs) have been completed. A Baseline RA was completed by the ADHS in 1995 and a Human Health RA was completed by Harding Lawson Associates (HLA), also in 1995. The results of the two RAs were similar in that they concluded that the media of concern was groundwater and the chemical of concern was VC. Both RAs also concluded that there are no current public health risks associated with the Site, as there is no complete exposure pathway for groundwater. The closest domestic supply wells are 1.5 miles north-northwest and 2 miles southsouthwest of the Site. Due to the relative stability of the detected VOC plume, neither of these wells is considered close enough to be impacted by the Site. Differences in the RAs were primarily related to the hypothetical potential future use of groundwater. ADHS's RA included future onsite ingestion of groundwater, a pathway deemed to be incomplete by United States Environmental Protection Agency [EPA] guidance in the characterization of future onsite risks (EPA, 1990). HLA did not consider that future onsite ingestion of groundwater is likely to occur. The differences in RA approaches resulted in significantly different estimates of risk. In the ADHS RA, the greatest excess cancer risk was 2x10<sup>-3</sup>, associated with theoretical potable use of groundwater from a specific monitor well located onsite. In the HLA RA, the greatest excess cancer risk, associated with potential potable use of offsite groundwater, was 1x10<sup>-4</sup>. From the date of this report both risk assessments have not been finalized. Prior to the completion of the FS, the draft RA prepared by ADHS should be finalized. The final RA should not only address the most recent collected groundwater data, it should also address the potential risks to human health and the environment of Arsenic, Thallium, and Lead present in the subsurface soils that exceed ADEQ's residential soil remediation levels (SRLs).

#### **Community Involvement Activities**

Community involvement at the Site began in the early 1980's, after the ADHS discovered contaminated groundwater in wells downgradient of the Site. The Site and associated remedial activities have been discussed at public meetings including: City Council meetings, meetings of the Phoenix Environmental Quality Commission, and meetings of the Phoenix City Council's Environmental and Natural Resources Subcommittee. Copies of technical reports, including

quarterly status reports and proposed technical tasks, have been submitted to the ADEQ for review and submission into public files. An information repository was established at the Ocotillo Library and contains various technical documents about investigative activities at the Site. The City also published a series of advertisements in local papers. The City and ADEQ also prepared and mailed an informational fact sheet about the Site to neighbors, businesses, and interested parties in February 1995.

Included as part of the RI is the Community Involvement Plan, Estes Landfill State Superfund Site. The community involvement plan was prepared in conjunction with ADEQ, the City, and Bank One to describe what community involvement activities should occur regarding the Site. The plan is based upon a series of 20 community interviews, which were jointly conducted by the City, its contractor, and ADEQ representatives. The plan discusses the historical activities at the Site, objectives of the plan and issues of concern. The plan provides the framework for future community involvement activities at the Site, including issuance of fact sheets and public notices, and timing of public meetings.

#### 1.0 INTRODUCTION

This report has been modified by Environmental Science and Engineering, Inc. (ESE), formerly known as QST Environemental, Inc. (QST), from the September 5, 1997 "Estes Landfill RI/FS Remedial Investigation (RI) Draft Report" prepared by Harding Lawson Associates (HLA) for the City of Phoenix (City) and Bank One Arizona, N.A. (Bank One). This report summarize the investigations, results and conclusions of previous Remedial Investigations (RI) performed at the closed Estes Landfill (Estes) by HLA and other consultants and contractors. In addition, this report summarizes more current RI results and conclusions from additional investigative data that was obtained and/or collected after the date of the draft report prepared by HLA.

This report is organized into the following sections:

•	Sections 1.0	Introduction - provides Site description, ownership and use history, and a brief summary of RI activities.
•	Section 2.0	Site Conceptual Model (SCM) - describes the key elements of the SCM.
•	Section 3.0	Physical Setting - discusses land use, hydrogeologic and environmental settings and presents a general overview of groundwater use in the area.
•	Section 4.0	Overview of RI and Feasibility Study (FS) activities - presents a synopsis of previous technical activities conducted as part of the Site investigation.
•	Section 5.0	Hydrogeology - includes a brief regional discussion followed by a detailed analysis of the study area using supporting data.
•	Section 6.0	Site Characterization and Nature and Extent of Contamination - discusses site characterization activities and details the nature and extent of contamination.
•	Section 7.0	Contaminant Fate and Transport - provides detailed Site information on the effects of recharge, biodegradation of volatile organic compounds (VOCs), and the effect of these on contaminant migration.
•	Section 8.0	Assessment of Risk - presents a summary of the hazard identification, toxicity assessment, exposure assessment, and risk characterization.
•	Section 9.0	Community Involvement - presents a summary of community involvement activities that have been conducted at the Site and outlines plans for continued community involvement detailed in the Community Involvement Plan - Estes Landfill State Superfund Site.
•	Section 10.0	Summary and Conclusions - briefly summarizes the components of the RI SCM and provides conclusions from which the consideration of technologies and

alternatives for groundwater remediation can be based.

Section 11.0
 References - presents a list of references cited throughout this report.

Section 12.0 Glossary - presents definitions of various technical terms used throughout this report.

During the completion of the RI, a number of interim or topical reports were generated, including quarterly reports provided to the Arizona Department of Environmental Quality (ADEQ). Other RI documents include various types of work plans, project specifications and guidance documents which describe how a particular phase of the investigation or task would be conducted. A complete list of these documents is provided in Table 1.1 and copies of these documents are available at ADEQ or the City. A repository for major project reports has also been established by the City of Phoenix at the Ocotillo Public Library at 102 West Southern Avenue, Phoenix, Arizona.

#### 1.1 Site Description

The Estes Landfill (Landfill) is located along the south bank of the Salt River (the River) between 40th and 45th Streets in Phoenix, Arizona (Figure 1.1). The Landfill lies in Township 1 North, Range 4 East and occupies portions of the southwest and southeast quarter sections of Section 18, Gila and Salt River Baseline and Meridian. The Landfill presently occupies approximately 40 acres along the river in an area dominated by newer commercial developments and older light industrial properties. The Landfill is bounded on the west by 40th Street, on the north by the Salt River and the Phoenix Sky Harbor International Airport, on the south by the Waste Management Regional Waste Transfer Station and the Bradley Landfill, and on the east by vacant land owned by the City and State Route 153. The properties to the south are separated from the Landfill by a 50-foot east/west utility easement.

The Landfill is fenced on all four sides with gated access off 40th Street. The Landfill is covered with one to several feet of native fill material, typically silt, sand and cobbles, and sparse vegetation. Other than the items related to the environmental work being conducted, the Landfill is generally vacant. Several large diameter concrete culvert pipe sections are located near the central portion of the Landfill. Two steel high voltage power line towers located in the utility easement near the southeast and southwest corners of the Landfill, and the old Estes

groundwater production well and associated wooden power poles are also found onsite. The structures related to the environmental work include various groundwater monitor wells, an inactive air stripper used for pilot tests, Baker tanks, and several permanent methane monitoring probes.

The Estes Landfill site (Site) was defined, by the Arizona Department of Environmental Quality (ADEQ) in April 1988, as the Estes Landfill Water Quality Assurance Revolving Fund (WQARF) Registry Site. The current boundaries of the Site are shown on Figure 1.2, and were based on inferred distribution of dissolved contaminants in groundwater that were identified as signature compounds to the Estes Landfill.

#### 1.2 Ownership and Use History

The Estes Landfill property was owned by members of the Wilbur Calvin Estes family from approximately 1945 through 1965 except for two years (1957 to 1959) when the property was transferred to and owned by Lyle Stanley Shawler. In 1965, the property was transferred to John Lattimore and Paul Van Leer. On June 1, 1966, legal title to the property was acquired by The Valley National Bank of Arizona N.A., predecessor to Bank One Arizona, N.A., via a warranty deed that identified Valley National Bank "as trustee" of the Estate of Mr. Estes. In 1982, the Landfill was acquired through the exercise of eminent domain by the City for the joint public purpose project described below.

It is believed that the Landfill was operated almost continuously from 1953 to 1972. The Estes Landfill was used by commercial trash haulers, septic tank effluent haulers, and other private users. At various times, other portions of the Landfill were used for agricultural purposes, a hog feeding operation, and a scrap metal operation.

Landfill operations were inspected by the Maricopa County Health Department (MCHD) on a fairly continuous basis between 1959 and 1972. The Estes Landfill was operated by Garbage Service Co. Inc., a refuse hauling and landfill operating company of which Mr. Estes was the principal. According to records from the MCHD, the Estes Landfill was officially closed in February 1972. Data collected from borings drilled along the northern boundary of



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CITY OF PHOENIX, ARIZ. v. GARBAGE SERVICES CO.

NO. C 89-1709 SC

816 F. Supp. 564 (1993)

CITY OF PHOENIX, ARIZONA, Plaintiff, v. GARBAGE SERVICES COMPANY, an Arizona corporation; et al., Defendants.

United States District Court, D. Arizona. January 19, 1993.

Roderick G. McDougall, City Atty., Craig J. Reece, Asst. City Atty., Christopher Thomas, Mark E. Freeze, Squire, Sanders & Dempsey, Phoenix, AZ, for plaintiff. Charles W. Jirauch, Karen A. Potts, Dawn R. Gabel, Streich Lang, P.A., Phoenix, AZ, for Valley Nat. Bank,

#### ORDER RE PARTIAL SUMMARY JUDGMENT

CONTI, District Judge.

#### I. INTRODUCTION

This is an action filed by the City of Phoenix pursuant to Section 107 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"). The City of Phoenix seeks to recover response costs it incurred in cleaning up a contaminated landfill site.

Defendant Valley National Bank ("VNB") now moves for partial summary judgment on the ground that VNB was not an "owner or operator" of the landfill as required by CERCLA. The City of Phoenix has filed a cross-motion for summary judgment on the same issue.

#### II. FACTS

Wilbur Calvin Estes was the owner of a landfill site located in the bed and on the south bank of the Salt River between 40th and 48th Streets in Phoenix, Arizona (the "Landfill"). On April 22, 1965, Mr. Estes conveyed the Landfill to Mr. and Mrs. Paul Van Leer and Mr. and Mrs. John Latimore. However, Mr. Estes retained an option to

Mr. Estes died testate on December 25, 1965. His will nominated VNB as executor, and VNB agreed to assume the role. The will also provided for a testamentary trust. and conveyed the balance of Mr. Estes' property to VNB "as trustee." VNB, acting on behalf of Mr. Estes' estate, exercised the option to purchase the Landfill on March 22, 1966. A warranty deed conveyed the property to VNB "as trustee."

At the time VNB purchased the Landfill, the site was being managed as a landfill by Garbage Services Company ("GSC"). VNB continued the practice of leasing the site to GSC. GSC managed and administrated the Landfill for the next six years, after which time the Landfill was closed and the site unused. Throughout that time, VNB paid the property taxes on the site, and also procured liability insurance for the Landfill.

In 1980, the City of Phoenix initiated condemnation proceedings by which it eventually acquired the entire Landfill. 1 The Final Judgment of Condemnation (Second Amended) found that "defendant Valley National Bank of Arizona, as trustee under [Estes's will], is record owner [the Landfill]."

In 1989, the City of Phoenix filed this action to recover response costs incurred in cleaning up hazardous substances deposited while the Landfill was an asset of Mr. Estes' estate. VNB now moves for summary judgment on Counts I and II of the City's First Amended Complaint. VNB contends that, as a matter of law, VNB was not an "owner or operator" of the landfill site as required by CERCLA. The City of Phoenix has filed a cross-motion for summary judgment on the same Counts, arguing that, as a matter of law, VNB was an "owner" under CERCLA, and that previous litigation involving the landfill site collaterally estops VNB from contesting ownership of the

#### **III. SUMMARY JUDGMENT STANDARD**

Summary judgment is proper if, after viewing the evidence in the light most favorable to the non-moving party, there is no genuine issue of material fact and the moving party is entitled to prevail as a matter of law. Fed.R.Civ.P. 56(c); Hutchinson v. United States, 838 F.2d 390, 392 (9th Cir.1988). The party moving for summary judgment has the burden of proving the absence of any genuine issue of material fact. Anderson v. Liberty Lobby, Inc., 477 U.S. 242, 256, 106 S.Ct. 2505, 2514, 91 L.Ed.2d 202 (1986).

If, however, the moving party demonstrates the absence of any genuine issue of material fact, the burden shifts to the non-moving party to produce evidence sufficient to support a jury verdict in his favor. *Id.* at 255, 106 S.Ct. at 2513-14. To meet this burden, the non-moving party must go beyond the pleadings and show "by her own

Though VNB concedes that it acted as a "fiduciary" of Mr. Estes' estate, it argues that it never accepted the position of trustee of the testamentary trust contemplated by Mr. Estes' will. The City of Phoenix argues that the positions taken by VNB in the condemnation proceedings collaterally estop VNB from denying that it was trustee.

During the 1980 condemnation action, 4 VNB's ownership was contested by Mary Rose Estes. The original judgment of the court provided that both Mary Rose Estes, as trustee, and VNB, as trustee, were record owners of the Landfill. VNB filed a motion for relief from judgment on the ground that "VNB, as Trustee, is record owner by earlier deed." Mrs. Estes filed a written opposition to VNB's motion. The court ruled in favor of

VNB and modified its judgment to show VNB, "as trustee," as sole owner of record.

This is a textbook example of an appropriate situation for the application of collateral estoppel. VNB was a party to the condemnation proceeding, albeit as a fiduciary to Mr. Estes estate. Because the proceeds of the condemnation action were at stake, VNB had the incentive to adequately and fully litigate the issue on behalf of the trust beneficiaries. The issue of ownership as trustee was squarely decided by the court, which held that VNB was the record owner of the Landfill, meaning the holder of legal title. Thus, VNB is collaterally estopped from relitigating the issue in this action.

VNB claims that collateral estoppel cannot be applied in this case because VNB was a party to the previous action only as a fiduciary. VNB argues that it did not have incentive to fully and fairly litigate the issue in the condemnation proceedings because its corporate assets were not at stake. This argument is plainly false; if VNB did not fully litigate the issue in the condemnation proceedings, it would have breached its fiduciary duty to the trust beneficiaries. VNB's corporate assets would have been recoverable, and VNB surely knew this fact. Thus, VNB had the incentive to fully litigate the issue in the condemnation proceedings, and collateral estoppel is

The court holds that VNB, as trustee of Mr. Estes' estate, held legal title to the Landfill. For the reasons set forth above, this makes VNB liable as an "owner" under Section 107 of CERCLA.

#### V. CONCLUSION

The court holds that VNB is not liable under CERCLA as an "operator" of the Landfill. However, VNB is liable under CERCLA as an "owner" of the Landfill because as trustee of Mr. Estes estate, VNB held record title to the Landfill.

In accordance with the foregoing, it is hereby ORDERED that:

VNB's motion for partial summary judgment is DENIED;

The City of Phoenix's cross-motion for partial summary judgment is GRANTED.

IT IS SO ORDERED.

#### **FOOTNOTES**

- 1. Portions of the site had been acquired by the City of Phoenix and the State of Arizona in earlier condemnation proceedings.
- 2. Although Kaiser Aluminum was decided after the instant motions were taken under submission, the parties asked for leave to brief the court on this and other recent cases. Leave is hereby granted, and the parties' supplemental briefs are deemed filed. These supplemental briefs are considered by the court in deciding these motions.
- 3. The court does not believe that this holding is inconsistent with this court's Memorandum and Order dated April 4, 1991 (Rosenblatt, J.). That Order held only that VNB could not be held liable as a trustee without further evidence of its status as trustee in addition to the warranty deed. See Order at 4-5. To the extent that the prior Order contains language implying that a trustee is not an owner under CERCLA by virtue of legal title only, the City's motion to reconsider the Order is granted.
- 4. The court in deciding the City's cross-motion relies only on the preclusive effect of the 1980 condemnation proceedings. The court expresses no opinion on the preclusive effects of the earlier proceedings in which the City and the State of Arizona condemned portions of the site.

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Date: April 30, 2015

#### VIA EMAIL AND FEDERAL EXPRESS

Nimeesha B. Lanson
Regulatory Compliance Administrator/4150B
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007
(602) 771-4763
Lanson.Nimeesha@azdeq.gov



Dear Ms. Lanson:

We are in receipt of your letter dated April 2, 2015, which claims that Microsemi Corporation ("Microsemi") is a corporate successor to Dickson Electronics Corporation ("Dickson") and is liable as an arranger for the possession and disposal of TCE at the Estes Landfill for a period of 6 months in the 1961/1962 time frame.

To be clear, Microsemi is not a successor to Dickson, does not have any association or relationship with Dickson, and disclaims any liability for Dickson.

Moreover, we would like to bring your attention to the following points:

- 1. Our research shows that Dickson operated the 8700 E. Thomas Road, Scottsdale site ("Site") from June 1967 to 1974. Siemens Electronic Components then took over and operated the Site from 1974 to May 1982. Given this timeline, the 6 month period during the 1961/1962 time frame for which the disposal of TCE at Estes Landfill took place predates the Site activities and possibly the building's existence by over 6 years.
- 2. Regardless of the timeline, Microsemi only acquired the business operations of Siemens Components, Inc. related to zener and diode production in 1982. Microsemi did not at any period have any affiliation with Dickson, let alone become its corporate successor.

We kindly ask that you re-evaluate your claim in light of the above points we have raised. Also, Dickson should be added to your list of potentially responsible parties (PRPs). If you have any questions, please contact Rob Norwood at (714) 372-8086.

Regards,

David Goron

David Goren

Senior Vice President

Telephone: 949.380.6100 Fax: 949.215.4996 www.microsemi.com

# **Kyle Johnson**

From: dellabradley@cox.net

Sent: Monday, April 13, 2015 11:50 AM To: Nimeesha B. Lanson

Subject: RPU15-255

Ms. Lanson,

This email is to advised you that I have received the documentation regarding RPU15-255 addressed to Peter Ellis (Pete's Septic Tank Service). James F. (Pete) Ellis died on 1-20-12 therefore all mail has been sent to me as his daughter.

Pete's Septic Tank Services was sold many years ago. I do not have any information regarding the sale of the business.

My father was the owner of Pete's Septic Tank Service, however I have no knowledge or involvement of the Estes Landfill site.

Thank You.

Della M. Bradley 442 S. Sweet Ridge Dr. Vail, Arizona 85641 (520) 300-4355



May 4, 2015

Nimeesha B. Lanson Regulatory Compliance Administrator/4150B Arizona Department of Environmental Quality 1110 W. Washington Street Phoenix, AZ 85007

Re:

Response to Notice Letter Pursuant to A.R.S. §49-287.04

Estes Landfill WQARF Registry Site, Phoenix, AZ

Dear Ms. Lanson:

This letter is in response to the above referenced notice letter from your office, dated April 2, 2015. In your letter, you have alleged that Safety-Kleen Systems, Inc. ("Safety-Kleen") is a potentially responsible party at the Estes Landfill WQARF Registry Site ("Estes Landfill"), and have further stated that you believe Safety-Kleen arranged for disposal of the hazardous substance "Safety-Kleen 105 Solvent", which contained "PCB, COC" at the Estes Landfill site. You have also presented a proposed allocation methodology, whereby Arrangers for disposal at the site are to be assessed the largest share of remediation costs, and have asked that any comments on this methodology be submitted no later than May 4, 2015.

Safety-Kleen has reviewed its records regarding this site and this material, and has not located any records regarding disposal of this material at Estes Landfill. Safety-Kleen notes that 105 Solvent is not typically disposed of at landfill sites. This solvent was generally manufactured, distributed to customers, and returned to Safety-Kleen for recycling and reuse. Also, your letter states that this material contained PCBs as the constituent of concern. According to the current MSDS for this material, 105 Solvent is a 100% petroleum distillate, and does not contain PCBs.

In your letter, you have not included any records supporting your allegation that Safety-Kleen arranged for disposal of 105 Solvent at Estes Landfill, nor have you provided any support for your allegation that this material contained PCB's. If you are in possession of additional records supporting these allegations, Safety-Kleen respectfully requests copies of these records.

Your letter indicates that you intend to allocate the largest share of costs to the "Arranger" group of PRP's, and further indicates that you intend to classify such arrangers by COC type and by size. With regard to COC type, you have not commented on what allocation is proposed for PCBs. With regard to size, it is unclear whether you are referring to the size of the business itself, or the volume of material actually disposed of at Estes Landfill. Safety-Kleen respectfully requests that you clarify this proposed allocation.

Until Safety-Kleen has had the opportunity to review documents in ADEQ's possession supporting its allegation, and the requested clarification regarding the proposed allocation methodology, Safety-Kleen is unable to provide additional detailed comments. Safety-Kleen reserves the right to do so in the future once the information requested herein has been provided. Safety-Kleen intends to continue to search for internal records regarding Estes Landfill, and reserves the right to supplement these comments if additional information is located. Safety-Kleen expressly reserves any and all defenses it might have to the matters set forth in your letter and does not intend to waive any of those defenses by submitting these comments.

Please feel free to contact me at (781) 792-5172 if you need additional information.

Sincerely,

Timmery Fitzpatrick

Senior Environmental Attorney

Jumy Spater

#### LATHAM & WATKINS LLP

August 17, 2016



Christina Silva Acting Regulatory Compliance Administrator/6120B Arizona Department of Environmental Quality 110 W. Washington Street Phoenix, AZ 85007

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Re:

Response to Notice Letter Pursuant to A.R.S. § 49-287.04 Estes Landfill WQARF Registry Site, Phoenix, Arizona

Dear Ms. Silva:

I am writing on behalf of my client, Siemens Corporation ("Siemens"), in response to the Notice Letter, dated April 28, 2016, from the Arizona Department of Environmental Quality ("ADEQ") regarding the Estes Landfill WQARF Registry Site. ADEQ has named Siemens as a Potentially Responsible Party ("PRP") as one of the corporate successors to Dickson Electronics Corporation ("Dickson"), which Siemens owned for a period of nine years beginning in 1973, well after the period of any alleged disposal by Dickson. Microsemi Corporation acquired the Siemens business unit holding the former Dickson assets in 1982.

Siemens appreciates the opportunity to provide written comments in connection with ADEQ's efforts to address site conditions at the Estes Landfill, and fully intends to cooperate with this process.

Please find the required responses to the Notice Letter below. Attached please find further elaboration on question 1(c), proposed alternative methods of allocating liability.

#### 1(a). Comments on the proposed remedial action plan pursuant to A.R.S. § 49-287.04(B)(3).

We have no comments on the proposed remedial action plan at this time.

# 1(b). Comments on ADEQ's proposed costs to implement the proposed remedial action plan.

We have no comments on the proposed costs to implement the proposed remedial action plan at this time.

#### LATHAM&WATKINS LLP

## 1(c). Propose alternative methods of allocating liability among responsible parties pursuant to A.R.S. § 49-287.04(C)(1).

We preliminarily propose the following alternative method of allocating liability among responsible parties:<sup>1</sup>

Class	ADEQ Proposed Allocation	Our Proposed Allocation
Arrangers	45-55%	35%
Operators	15-25%	25%
Owners	10-20%	20%
Transporters	10-20%	20%

Please see Attachment A for a more detailed analysis of our preliminary proposed allocation.

Our approach to allocation is preferable to ADEQ's proposed allocation because there are many known, non-arranger parties who actively participated in and benefited from the operation of the Estes Landfill and received a financial benefit. As a result, these non-arranger parties should receive the high-end of ADEQ's proposed allocation, at a minimum, and the Arranger share should be decreased to more fairly and accurately reflect the diverse contribution from all PRP classes to current site conditions. It would be unreasonable for the Arranger share to be double or quintuple the shares for the other classes.

The Operators should receive at least 25 percent because they were primarily responsible for controlling the site to prevent releases, determining what types of wastes were disposed of at the site and which transporters and arrangers were allowed to use the site, and benefited financially from running a landfill business. The Owners should receive the third-largest share, at a minimum of 20 percent, because they allowed the site to be used as a landfill, were responsible for properly maintaining the site and for any releases from the site, and collected rent throughout the period of the landfill operations. Finally, the Transporters should receive an equal share to the Owners, at 20 percent, because each of the potentially responsible Transporters specifically selected the Estes Landfill to dispose of hazardous waste. Unlike the Arrangers, all three of these parties received a financial benefit from the hazardous waste disposals at the Estes Landfill. Therefore, all three of these parties should receive a significant allocation.

It is important to note that within the allocation for the class of Arrangers, and for that matter any other class, the liability for each original Arranger should be split between the successors to that Arranger. In other words, the successors should only be responsible for the liability created by their predecessor—not for a percentage of the total Arranger allocation. Therefore, the total class share must be further broken down by specific Arranger, and then divided on a per-share basis among the successors to that share. For example, the share of an entity like Dickson should be subdivided between Siemens and Microsemi, its successors, rather

<sup>&</sup>lt;sup>1</sup> We reserve the right to modify our proposed allocation methodology and percentages based on documents to be received from ADEQ subject to a request of public records.

#### LATHAM&WATKINS LOP

than each successor receiving an independent allocation. Finally, the allocation that is ultimately applied to Siemens should be based on substantial evidence. Among other things, we have been unable to locate any evidence supporting the statement in the Notice Letter that Dickson may have used the landfill for up to six years.

2. Provide all information known to you regarding any person who may be liable under this investigation or any facility within the site from which a release of hazardous substances may have occurred, pursuant to A.R.S. § 49-287.04(C)(3).

We do not have any information regarding any person who may be liable under this investigation because we have not had an opportunity to review any of the records related to this site in order to develop an understanding of the alleged bases of liability for the PRPs. We submitted a public records request by email on July 27, 2016 for documents related to the liability of Siemens, Dickson, or Microsemi. On August 9, 2016, ADEQ responded that "most if not all of the documents . . . are attorney client privilege." A site like this, with a large landfill operating for 15 years in a major city, should have a vastly larger number of arrangers than have been listed in the Notice Letter. Although Siemens plans to continue to cooperate with ADEQ, we must therefore reserve our right to present information regarding any person who may be liable at a later date when we have had an opportunity to review the relevant documents.

3. Submittals for cost credits against potential liability.

We do not have any submittals for cost credits against potential liability at this time.

Please do not hesitate to contact me if I can provide any additional information or assistance. We look forward to working cooperatively with ADEQ and the other parties to resolve the allocation issue at the Estes Landfill site.

Ben 12/6

Kelly E. Richardson

of LATHAM & WATKINS LLP

# Attachment A Proposed Preliminary Alternative Method of Allocating Liability Among Responsible Parties

#### 1. Proposal

As discussed in our Response to the Notice Letter, we preliminarily propose the following alternative method of allocating liability among responsible parties:

Class	ADEQ Proposed Allocation	Preliminary Proposed Allocation by Siemens
Arrangers	45-55%	35%
Operators	15-25%	25%
Owners	10-20%	20%
Transporters	10-20%	20%

Our proposed allocation is appropriate under Arizona law and relevant case law, as discussed in more detail below.

#### 2. Relevant Law

Arizona Revised Statute ("A.R.S.") Section 49-285.E delineates the factors that ADEQ must consider in allocating several liability. These factors are: (1) the amount and concentration of each hazardous substance involved; (2) the degree of toxicity of each hazardous substance involved; and (3) the degree of involvement by the responsible parties in the generation, transportation, treatment, storage or disposal of the hazardous substance. § 49-285.E.

ADEQ has already determined (1) the amount and concentration of each hazardous substance involved and (2) the degree of toxicity of each hazardous substance. Therefore, the primary question is the degree of involvement by the responsible parties in the "generation, transportation, treatment, storage or disposal of the hazardous substance." *Id.* The Arizona Revised Statutes do not provide detailed guidance on how to allocate responsibility between classes of responsible parties, and Arizona courts have rarely adjudicated allocation issues. Thus, we will look to precedent under the related federal legislation and guidelines—the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA").

We have also relied upon U.S. Environmental Protection Agency ("EPA") guidance, consistent with past ADEQ practices. ADEQ followed federal guidelines for allocating responsibility under the Water Quality Assurance Revolving Fund ("WQARF"). In *Arizona v. City of Tucson*, ADEQ brought an action under both CERCLA and WQARF. 761 F.3d 1005, 1016 (9th Cir. 2014)<sup>1</sup>. In *City of Tuscson*, the

<sup>&</sup>lt;sup>1</sup> Although the Court disputed the sufficiency of the evidence provided in support of allocation, ADEQ's methodology was not attacked.

plaintiffs' disputed allocation under a consent decree. *Id.* ADEQ explained that it "relied on EPA guidelines that allocate responsibility by PRP category (i.e., owner/operator, transporter, generator/arranger). Applying these guidelines, ADEQ reviewed the available information to come up with responsibility allocations for each PRP." *Id.* 

#### 3. Operator Allocation

Turning first to operators, EPA guidance states that "operator culpability is a significant factor in determining the percentage of responsibility to be allocated." Superfund Program; Non-Binding Preliminary Allocations of Responsibility, 52 Fed. Reg. 102, 19920 (May 28, 1987) (hereinafter "EPA Guidelines"). These same guidelines suggest allocation among successive operators should be based on length of time operated, all other things being equal. *Id*.

ADEQ has also previously stated that operators' allocations were largely based on length of operation. *Id.* In *Amoco Oil Co. v. Dingwell*, the court held that in allocating liability between waste generators and the site operator, the last three *Gore* factors are most important. 690 F.Supp. 78, 86–88 (D. Me. 1988). Those factors are: (i) degree of involvement by the parties; (ii) degree of care; and (iii) degree of cooperation with Federal, State, or local officials. *Id.* Other courts have adopted this reasoning. In *Gould Inc. v. A&M Battery & Tire Serv.*, the court held that the predecessor owner-operator's lack of care<sup>2</sup> warranted an increase in the successors' share of clean-up costs, and that the generator should not be "burdened with a cost equal to the [owner-operator], since the past owner and operator of the site continually refused to enforce or implement [recommended and basic] housekeeping measures." 987 F. Supp. 353, 371 (D. Pa. 1997) (reversed on other grounds). The Court ultimately held that the owner-operator should be responsible for 75% of the costs and the generators for 25% of the costs.

Other courts have also found operators to be primarily responsible for response costs. For example, 60 percent of response costs were allocated to the operator of a wood treatment plant that the operator leased from an owner (who was the owner at time of contamination and at time of lawsuit). Weyerhaeuser Co. v. Koppers Co., 771 F. Supp. 1420 (D. Md. 1991). The Court looked to all of the Gore factors, as well as relative degree of fault, benefit received, and acquiescence of the parties. *Id.* The Court found that the operator's operations were the

"sole cause of the environmental damage. For this reason alone, [Operator] must be allocated the lion's share of the responsibility. The fact that the lease had expired and [Operator] had ceased operation ten years before is no defense to CERCLA liability."

<sup>&</sup>lt;sup>2</sup> Examples of the predecessor's lack of care included refusing to cover bins that contained lead, failing to prevent water and water runoff from being contaminated, and failing to clean the driveways or the dust off equipment. The court noted that many of these measures "were available at a minimal cost." *Gould*, 987 F. Supp. at 371.

*Id.* Nonetheless, the Court allocated 40 percent to the owner because the owner knew of and acquiesced to the activities, and even required them as a condition of the lease between the parties. *Id.* The Court also found that the owner benefited and was partially responsible. *Id.* 

Applying these principles to the Estes Landfill, we believe that the allocation share for the class of Operators should be at least 25 percent, which is within the range proposed by ADEQ. Our proposed allocation would meet ADEQ's suggested breakdown in Attachment C to the Notice Letter, that the Operators should receive the second-largest allocation after the Arrangers, and slightly more than the Owners.

As stated in Attachment C, "Operators bear a major responsibility for determining what types of wastes were accepted at the site, which transporters and arrangers were allowed to dump there, and the manner in which the wastes were disposed of." Based on this language, and the facts here, it would be unjust for the Arrangers to have more than double and up to quadruple the liability of Operators. We therefore propose that the Operators of the Estes Landfill, and their successors, be allocated no less than a 25 percent share. Based on the case law, the operator share could be as high as 60 or 75 percent.

#### 4. Owner Allocation

Turning now to owners, EPA guidance is exactly the same as it is for operators. The EPA Guidelines state that "owner culpability is a significant factor in determining the percentage of responsibility to be allocated." EPA Guidelines 52 Fed. Reg. at 19920. The Guidelines suggest that allocation among successive owners should be based on length of ownership, all other things being equal. *Id*.

ADEQ has also previously based allocations between owners on length of ownership. Arizona v. City of Tucson, 761 F.3d 1005, 1016. This method has been affirmed by the Fourth Circuit, which stated that courts frequently consider the length of time the owner was in possession while the contamination occurred. Ashley II of Charleston, LLC v. PCS Nitrogen, Inc., 791 F. Supp. 2d 431, 491-92, 494-95 (D.S.C. 2011), aff'd 714 F.3d 161 (4th Cir. 2013). In the Fourth Circuit case, the Court allocated liability amongst various site owners, allocating the most liability—45 percent—to the original owner and operator of the facility. Id. The Court held that important considerations in determining owner liability include whether the owner contributed to the contamination and what actions the owner took in constructing or maintaining the facility. Id.

In addition to Ashley II, there are numerous cases in which an owner has been given a majority or significant share of liability for response costs. For example, in Seneca Meadows, Inc. v. ECI Liquidating, Inc., the District Court dismissed all of the plaintiff-owner's claims against an arranger for contribution to response costs on the basis that the plaintiff was liable as owner of the property. 427 F. Supp. 2d 279 (W.D.N.Y. 2006). The court found that "much of the so-called response costs should be attributed to" the plaintiff because plaintiff's failure to properly deal with problems on the property exacerbated the situation and caused the property to deteriorate. Id. Moreover, the work at the property had economically benefitted the plaintiff. Id.; see also Responsible Envtl. Solutions Alliance v. Waste Mgmt., Inc., 2011 U.S. Dist. LEXIS 14204 (S.D. Ohio Feb. 3, 2011) (allocating 49.5% of response costs to the successor to the owner-transporter); Ellman v. Woo, 1991 U.S. Dist. LEXIS 18750 (E.D. Pa. Dec. 15, 1991) (allocating 50% of the costs to the current owner and 50% to one of the generators).

Applying these principles to the Estes Landfill, we believe that the allocation share for the class of Owners should be at least 20 percent, which is within the range proposed by ADEQ. Our proposed allocation would meet ADEQ's suggested breakdown in Attachment C to the Notice Letter, that the Owners "receive an allocation similar to, but perhaps somewhat lower than, that of the Operators group."

As stated in Attachment C, Owners "bear a significant responsibility under the regulatory provisions." In fact, per Attachment C, "[d]uring the period that followed active waste disposal operations, Owners bear major responsibility for the continued release of COCs from the site and for proper maintenance and oversight of the facility to minimize continued or potential releases." Based on this language, and the facts here, it would be unreasonable for the Arrangers to have more than double and up to quintuple the liability of the former Owners. The Owners here selected the site, financially benefitted from the site, and were responsible for maintaining the site to prevent releases. We therefore propose that the Owners of the Estes Landfill, and their successors, be given no less than a 20 percent share. Based on the case law, the owner share could be as high as 50 percent or more.

#### 5. Transporter Share

EPA's proposed guidelines states that transporters can be allocated a share, and recommend assigning the relative allocation shares among transporters "based on volume, taking into account appropriate considerations such as packaging and placement of waste at a site." EPA Guidelines, 52 Fed. Reg. at 19921.

When allocating liability among transporters and other classes, courts have considered level of culpability (whether a transporter knew the nature of the waste being transported and the method of disposition), degree of benefit (amount of payment received), responsibility (role in selecting the site), and ability to pay. *U.S. v. Davis*, 31 F.Supp.2d 45, 66 (D.R.I. 1998), aff'd, 261 F.3d 1 (1st Cir. 2001) (allocating over 33 percent of an orphan share to the transporters who brought it to the site, and over 60 percent to the owners). Courts have attributed to transporters as much as 50 percent of

past and future response costs attributable to the waste the transporter hauled to a site. U.S. v. Atlas Minerals and Chemicals, Inc., 1995 WL 510304 \*1, \*88 (E.D.P.A. 1995).

Applying these principles to the Estes Landfill, we believe that the allocation share for the class of Transporters should be 20 percent, which is within the range proposed by ADEQ. Our proposed allocation would meet ADEQ's suggested breakdown in Attachment C to the Notice Letter, that the Transporters receive a significant share that is similar to the Owners and Operators, but less than the Arrangers.

As stated in Attachment C, "Transporters are in effect the 'middlemen' of the process" and it is "appropriate, therefore, to allocate a significant share to the Transporter group, similar to the Owners and Operators, but less than the original generators of the waste (Arranger group)." Based on this language, and the facts here, it would be unreasonable for the Arrangers to have more than double and up to quintuple the liability of the Transporters. As stated in Attachment A to the Notice Letter, all ten transporters specifically selected the Estes Landfill for disposing wastes. We therefore propose that the Transporters to the Estes Landfill, and their successors, be given no less than a 20 percent share. Based on the case law, the transporter share could be as high as 50 percent or more.

#### 6. Arranger Share

To date, ADEQ has identified only eight arrangers, which is extraordinarily low for a landfill site that was operational for many years in a major city. This suggests a strong possibility that there are additional arrangers not yet identified. Because WQARF is strictly proportional, the identified arrangers cannot be made to bear costs that rightfully belong to unidentified arrangers. Given the relatively large number of known owners, operators, and transporters, it is more equitable to reduce the arranger share to no more than 35 percent.

#### LATHAM&WATKINS LIP

February 20, 2017

Christina Silva Regulatory Compliance Administrator/6120B Arizona Department of Environmental Quality 110 W. Washington Street Phoenix, AZ 85007

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Re:

Response to Notice of Allocation Approach Pursuant to A.R.S. § 49-287.04 Estes Landfill WQARF Registry Site, Phoenix, Arizona

Dear Ms. Silva:

I am writing on behalf of my client, Siemens Corporation ("Siemens"), in response to the Notice of Allocation Approach, dated January 23, 2017, from the Arizona Department of Environmental Quality ("ADEQ") regarding the Estes Landfill WQARF Registry Site. ADEQ has named Siemens as a Potentially Responsible Party ("PRP") as one of the corporate successors to Dickson Electronics Corporation ("Dickson"), which Siemens owned for a period of nine years beginning in 1973, well after the period of any alleged disposal by Dickson. Microsemi Corporation acquired the Siemens business unit holding the former Dickson assets in 1982.

Siemens appreciates the opportunity to provide written comments on the allocation approach. We agree with the approach, insomuch as the allocation for arrangers has been reasonably reduced, and the operator, transporter, and owner allocations have been set at the mid- or higher end of the original proposed range. However, we reserve the right to object to the details of the exact method of allocation within each sub-group, which has not been released by ADEQ. Further, in making this response, Siemens does not intend to admit to any liability, and reserves all of its rights to contest any liability assessed against it in connection with this matter.

Additionally, it is unclear at this time whether the City of Scottsdale ("City") has been included as an arranger in the trichloroethylene ("TCE") sub-group. The City was responsible for solid waste disposal at the time that Dickson Electronics was allegedly sending waste to the Estes Landfill. Under A.R.S. § 49-283 (A)(2), an arranger is defined as someone who "[o]wned or possessed the hazardous substance and arranged, by contract, agreement or otherwise, for the disposal, treatment or transport of the hazardous substance." The City indisputably possessed TCE, through its solid waste disposal service, and arranged for the TCE to be transported and

#### LATHAM&WATKINS LLP

disposed of at the Estes Landfill. Therefore, the City was a TCE arranger and should be included in the TCE arranger subgroup if it is not already.

Finally, we are interested in beginning settlement discussions with ADEQ and ask for an estimate of the total liability at the Estes Landfill site that ADEQ would claim to be Siemens' at this time.

\* \* \*

Please do not hesitate to contact me if I can provide any additional information or assistance. We look forward to continue working cooperatively with ADEQ to resolve this matter as efficiently as possible.

Very truly yours,

Kelly E. Richardson

of LATHAM & WATKINS LLP



#### Bruce Washburn

City Attorney

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February 22, 2017

Ms. Christina Silva
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, Arizona 85007
silva.christina@azdeq.gov



Re:

Estes Landfill WQARF Registry Site, City of Scottsdale's Response to the State's

Revised § 49-287.04(C)(1) Notice

Dear Ms. Silva:

The City of Scottsdale (City) received your January 23, 2017 letter serving as a revised notice of allocation approach pursuant to A.R.S. § 49-287.04(C)(1) for the Estes Landfill WQARF Registry Site, Phoenix, Arizona (Notice). Although the State revised its Notice to reflect a slight downward adjustment in arranger category allocation percentage, it was otherwise the same as the Notice dated April 2, 2015 to which the City responded on May 4, 2015.

Despite our repeated requests over the years, the State has yet to share any documentary support for its theory of the City's liability for the Estes Landfill WQARF Site (Site). Because of this, it is extremely difficult to respond to this Notice and the State's claims. Nonetheless, the City submits this Response as an attempt to exercise the opportunity that was envisioned to be provided to PRPs through A.R.S. § 49-287.04(C).<sup>2</sup>

Through this Response, the City reiterates and incorporates all of the City's previous responses since this matter was first brought to the City's attention, including but not limited to, those dated September 14, 2000, February 24, 2003, and May 4, 2015. The City also expressly reserves the right to add to or modify in any way, its legal arguments as the matter progresses and especially after the State has fully disclosed its arguments and the evidence supporting those claims.<sup>3</sup>

<sup>1</sup> Down to 42% from an earlier range of 45-55%.

<sup>3</sup> Included within the City's reservation of rights is the option to retain additional experts and expert opinions for use in the City's defense.

<sup>&</sup>lt;sup>2</sup> This Response is not intended to be a full brief on all the issues associated with the Site and the City's position.

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In summary, the City has uncovered <u>no</u> evidence that even suggests that waste from the City through its agreements with Garbage Service Company (GSC) may have been delivered to the Estes Landfill at any time or for any reason. And despite numerous public records requests, no witness statement or other evidence has been uncovered serving as the basis for the State's claim.

I. The City Is Not A WQARF Arranger.

The State has claimed that the City is liable as an arranger for the Site. Specifically, the State claims that the City

Entered into exclusive agreements with Garbage Service Company, Inc., for the collection and disposal of waste generated within the municipality's city limits. A portion of the waste that was collected contained hazardous substances, including those generated by Dickson Electronics Corporation (now Microsemi Corporation). During a 6-month period in 1961/1962, all wastes from the City of Scottsdale were disposed of at the Estes Landfill.<sup>4</sup>

In other correspondence, the State claimed it had evidence that there was local flooding during 1961 or 1962 which forced the City to dispose of its waste at Estes Landfill for a 6-month period.<sup>5</sup>

As you know, A.R.S. § 49-283(A)(2) defines an arranger for WQARF purposes as someone who:

Owned or possessed the hazardous substance and arranged, by contract, agreement or otherwise, for the disposal, treatment or transport for disposal or treatment of the hazardous substance.

In order to find that the City is an "arranger" at this Site, the State must show both that (1) the City owned or possessed a hazardous substance, and (2) the City arranged by contract for the disposal of that hazardous substance at Estes Landfill. The evidence in the State's public records and as disclosed by the City simply do not support those two statutory elements, meaning that the State's claim is based upon a flawed understanding of both the facts and the law.

- A. The City Did Not Arrange By Contract For Disposal Of Hazardous Substances At Estes Landfill.
  - 1. The City Did Not Use Estes Landfill.

Addressing the second statutory element first in this Response, the State cannot show that the City arranged by contract for hazardous substance disposal at the Estes Landfill. Although the City readily admits that it had agreements with GSC, they were not for use of Estes Landfill. A review of the relevant waste collection and disposal chronology demonstrates the fallacy of any claim to the contrary.

<sup>5</sup> ADEQ Letter to City of Scottsdale dated December 20, 2002.

<sup>&</sup>lt;sup>4</sup> ADEQ Notice Letter Pursuant to A.R.S. § 49-287.04 to the City of Scottsdale (April 29, 2016); ADEQ Notice Letter Pursuant to A.R.S. § 49-287.04 to the City of Scottsdale (April 2, 2015).

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#### a. Connections to GSC

Prior to 1961, any GSC waste collection within the then-town's borders<sup>6</sup> was pursuant to private arrangements with private parties. The City provided the State with copies of City Council meeting minutes reflecting any reference to or arrangements with GSC from 1951 through 1961.<sup>7</sup> There was no agreement between the City and GSC during this time period. Instead, the City's sole involvement, beginning on May 19, 1953, was the granting of a municipal "franchise" allowing GSC to conduct business – collecting garbage, trash, and rubbish – within the Town's borders for one year.<sup>8</sup> This was not a typical contract arrangement but instead a franchise permission which required GSC to pay the City for this privilege.<sup>9</sup>

As described by GSC Manager, Mr. Lawrence Redman in his 1962 deposition, GSC's solid waste services provided in Scottsdale at that time were not based upon a contract with the City, but instead were based on billing and collecting individual customers who could choose whether they wanted to use GSC's services. In short, before May 1, 1961, individual residents and commercial operations within the boundaries of the City made their own arrangements with GSC for collection and disposal of their own waste.

This municipal or utility-type franchise was simply permission for GSC to operate within Scottsdale's borders pursuant to private arrangements between GSC and private entities and commercial businesses. These private arrangements did not involve the City at all. Such franchise permission is similar to approval granted at the State level by entities such as the Corporation Commission or permit issuance by ADEQ. Such governmental action is not a contract or agreement with the private business but solely permission to operate the business within the governmental entity's physical boundaries.

It wasn't until 1961 that the City and GSC entered into two contracts. One of these agreements was for GSC to provide garbage and trash collection service. The other agreement was for GSC to operate a sanitary landfill for the benefit of Scottsdale residents.<sup>11</sup> Yet neither of these contracts were to use Estes Landfill.

#### b. Estes Landfill Was Not Among the Disposal Sites Used.

According to the records that the City gathered and produced to ADEQ, GSC used two landfills for Scottsdale-related waste, neither of which was the Estes Landfill. GSC leased a landfill location on the Salt River Pima Maricopa Indian Community Reservation (SRPMIC Reservation) for the purpose of disposing waste collected in Scottsdale. This landfill was located one mile

<sup>&</sup>lt;sup>6</sup> On June 25, 1951, Scottsdale, which covered approximately one square mile and contained approximately 2,000 people, was declared to be an incorporated town. In 1961, the Town of Scottsdale became the City of Scottsdale, containing about 4.9 square miles and 10,000 residents. To avoid confusion, this Response will reference the City of Scottsdale or City, rather than making the distinction between the Town and the City.

<sup>&</sup>lt;sup>7</sup> Exhibits 14-21, 23.

Exhibit 21 (approving the franchise); see also Exhibits 22 and 23 (explaining the franchise concept).

<sup>&</sup>lt;sup>9</sup> Exhibit 23.

<sup>&</sup>lt;sup>10</sup> Exhibit 6.

<sup>&</sup>lt;sup>11</sup> Exhibit 26; see also Exhibits 6, 24, and 25.

<sup>12</sup> Exhibit 6.

Ms. Christina Silva Arizona Department of Environmental Quality February 22, 2017 Page 4 of 8

southwest of the intersection of McDowell and Country Club Roads. GSC also leased space from Mr. Hal Adams at a site located two and one-half miles south of McDowell Road and one half mile east of Hayden Road (the Hal Adams Landfill). This was consistent with the requirement in the 1961 agreement, for GSC to provide landfill services from a site that GSC leased and operated just south of and within three miles of the then-existing city limits.

An affidavit from a City solid waste driver who was previously a 20-year GSC garbage truck driver confirms that City waste was delivered to the SRPMIC Reservation landfill site which GSC operated from 1953 to 1963. In his 1962 deposition, Mr. Lawrence Redman of GSC, contrasted the SRPMIC Reservation site that GSC leased and used for Scottsdale-related waste with a different landfill and location owned by GSC that was used for Phoenix, not Scottsdale, waste. 17

There is simply no evidence that the City contracted with GSC for waste disposal at Estes Landfill. Instead the evidence that the City found and disclosed to the State, demonstrates that any agreement with GSC involved use of one of two landfills, the Hal Adams Landfill on the SRPMIC Reservation, <u>not</u> the Estes Landfill.

#### 2. There Was No Flooding During 1961 and 1962.

There has been no support offered by the State nor any found in the public record to support the State's claims that a flood occurred in 1961 or 1962. Because the State made this claim, the City both conducted its own research regarding the Salt River flows and local flooding and retained an expert to examine the issue. Typical of landfill locations of their era, both the Hal Adams Landfill and the landfill on the SRPMIC Reservation were located quite close to (although on opposite sides of) the Salt River. The hydrologic data from 1961 and 1962, however, present no evidence of anything other than below average river flows and certainly no evidence of flood events.<sup>18</sup>

William L. Graf, Ph.D., an expert on fluvial geomorphology, examined whether there was data to indicate flooding of the Salt River during 1961 and 1962. Dr. Graf explained that during 1961, the peak flow of the Salt River below Granite Reef Dam was a mere 125 cubic feet per second; and there were no recorded flows in the Salt River below Granite Reef Dam in 1962. Dr. Graf concluded that "flooding did not occur in the river in 1961 or 1962." A review of the State's public records associated with this Site also failed to reveal any evidence of flooding.

There is no data to support the State's claim of flooding during 1961 and 1962 and thus, no support for the State's contention that the City sent waste to the Estes Landfill for a 6-month period due to flooding.

<sup>&</sup>lt;sup>13</sup> Exhibits 7, 8, and 33.

<sup>&</sup>lt;sup>14</sup> Exhibits 27 and 34.

<sup>15</sup> Exhibit 26.

<sup>&</sup>lt;sup>16</sup> Exhibit 7.

<sup>&</sup>lt;sup>17</sup> Exhibit 6.

<sup>18</sup> Exhibit 35.

<sup>&</sup>lt;sup>19</sup> Exhibit 37.

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#### B. The City Did Not Own or Possess a Hazardous Substance.

In addition to showing that the City arranged by contract for the disposal of a hazardous substance at Estes Landfill, the State must also show that the City owned or possessed that hazardous substance, an element that the City also contests. WQARF does not make the City responsible for private parties' actions or for agreements between private parties. Arranger liability under state law is narrower than its federal counterpart, CERCLA. State law requires that to qualify as an arranger for WQARF liability, the entity must have owned or possessed the hazardous substance. And here, there is no evidence that the City ever owned or possessed wastes containing hazardous substances.

#### II. The State Should Allocate Responsibility to Other Identified Parties.

In addition to the City's position that it does not qualify as a WQARF arranger for this Site, the City also continues to maintain that the State has failed to include other parties as PRPs that it should have and has failed to properly allocate responsibility to the parties that it has included as PRPs. At one time, ADEQ estimated the agency had requested information from 12,000 parties. Yet now, without any explanation, the State has reduced the list of PRPs to a mere 22. The City maintains that any liability allocation should be made solely among other individuals, entities, or identified PRPs who actually arranged for the disposal of waste at the Estes Landfill, transported waste to the Site, or owned or operated the facility during its twenty years of operation.

Although the City appreciates the decrease in percentage of arranger liability contemplated for the allocation, the City still believes that owners and operators should bear more of a responsibility than the Notice allocation of 15 percent and 23 percent respectively, due to their role in accepting and processing the waste and mandating the conditions for waste acceptance.

Those who actually can be shown to have contributed solvents to the landfill should be responsible. The City should not be considered a liable party at all. Alternatively, and only for the sake of preserving the argument, if the City is considered a liable party, it should be in a separate category for municipal waste with only a miniscule allocation amount.

### III. The State Should Reexamine Its Position that It Need Not Produce Records to Support Its Claims.

By way of this letter, the City hereby again requests any and all documents that serve as the basis for the State's allegation of City liability for this Site. 20 At this late stage in the WQARF process for this Site, it is hard to believe that simply providing the documents upon which the State bases its claim of the City's liability would somehow compromise the integrity of an ongoing investigation. If the State has additional information about the City's historic disposal practices that are contrary to what the City has disclosed, it would be beneficial to both the City and the State to have that information now to facilitate educated decisions moving forward.

<sup>&</sup>lt;sup>20</sup> The City reserves the right to request additional documents after the State produces its evidence regarding the City's alleged liability as well as the responses from the other parties to whom ADEQ sent WQARF requests for information and notices.

Ms. Christina Silva Arizona Department of Environmental Quality February 22, 2017 Page 6 of 8

Should the State desire to discuss this Response or the matter further, please feel free to contact me.

Sincerely,

lanis L. Bladine

Senior Assistant City Attorney

cc: Bruce Washburn, City Attorney (without attachments)

Jeffrey Cantrell, Attorney General's Office (without attachments)

Anthony Young, Attorney General's Office (without attachments)

#### List of Exhibits<sup>21</sup>

Exhibit Number	Description	Associated City Response
1	Council Minutes of June 9, 1959	City of Scottsdale Response to ADEQ dated September 14, 2000 (hereafter referenced as 2000)
3	Council Minutes of March 15, 1960	2000
3	ADEQ Hazardous Waste Section Annual Facility Registration Fee Invoice signed April 13, 2000	2000
4	City's Environmental Procurement Policy	2000
5	City of Scottsdale's Park System Table	2000
6	Deposition of Mr. L.E. Redman dated Sept. 21, 1962	2000
7	Affidavit of Bud Deal dated March 29, 1992	2000
8	Affidavit of Claude Crosier dated June 18, 1992	2000
9	Request for Council Action dated Jan. 21, 1966	2000
10	Council Minutes of February 1, 1966	2000
11	Landfill Agreement dated January 1, 1971	2000
12	Council Minutes of August 23, 1960	2000
13	Complaint, Hal Adams v. City of Scottsdale, No. 125881	2000
14	Council Minutes of July 3, 1951	2000
15	Council Minutes of July 27, 1951	2000
16	Council Minutes of August 14, 1951	2000
17	Council Minutes of September 21, 1951	2000
18	Council Minutes of November 30, 1951	2000
19	Council Minutes of December 7, 1951	2000
20	Council Minutes of December 9, 1952	2000
21	Council Minutes of May 19, 1953	2000
22	Council Minutes of January 2, 1964	2000
23	Council Minutes of February 5, 1957	2000
24	Council Minutes of January 24, 1961	2000
25	Council Minutes of April 11, 1961	2000
26	Agreement between the City and Garbage Service Co. dated May 1, 1961	2000
27	Council Minutes of November 28, 1961	2000
28	Council Minutes of January 16, 1962	2000
29	Council Minutes of January 30, 1962	2000
30	Council Minutes of February 13, 1962	2000
31	Complaint Garbage Service Company v. City of	

<sup>&</sup>lt;sup>21</sup> This is a preliminary list and is not intended to be exhaustive. The City reserves the right to modify this list in any way.

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	Scottsdale, No. 140548	
32	Response to RFI Question 18	2000
33	City Letter to Mr. Grover Serenbetz, City of Tempe dated March 29, 1979	City of Scottsdale Response to ADEQ dated February 24, 2003
		(hereafter referenced as 2003)
34	Newspaper Photograph and Caption	2003
35	USGS Peak Stream Flow Data for Salt and Verde Rivers	2003
36	Electronic mail message to Professor Graf dated January 24, 2003	2003
37	Report by William L. Graf, Ph.D. dated January 28, 2003 and attached materials	2003
38	Arizona Climate: The First Hundred Years	2003
39	A History of the Salt River Channel in the Vicinity of Tempe, Arizona 1868-1969	2003
40	Council Report regarding Contract No. 2002- 001-COS	2003
41	Council Report regarding Contract Modification for Contract No. 2002-001-COS-A	2003

**EXHIBIT #1** 

The regular meeting of the Common Council of the Town of Scottsdale was called to order by Mayor M. E. Kimsey, Tuesday, June 9, 1959, at 7:30 o'clock P. M., in the Town Hall.

#### Roll call:

Present:

Mayor M. E. Kimsey Councilwoman Mildred Bratzel

Councilmen: Jim Matthews
Bill Schrader

E. G. Scott George Stroup

Attorney Phil Messinger Manager Gordon Allison Clerk Dorothy Ketchum

Absent:

Councilman George Cavalliere

Impala Estates, a subdivision of (part of  $S_{\frac{1}{2}}$ ,  $SE_{\frac{1}{4}}$ ,  $SW_{\frac{1}{4}}$ , Sec. 21, T2N R4E) was presented. Planning and Zoning recommendations were presented as follows:

That the plat be rejected due to dead end alley from the East and lack of 65' dedication on the Lafette Blvd. side. Motion was made by George Stroup, second by E. G. Scott, to reject Impala Estates Subdivision plat as recommended by the Planning and Zoning Commission.

Gordon Allison reported that all of Papago Parkway, West of present fence along Scottsdale Road to the City limits and South of the fence line running along McDowell Road to City limits, be changed from "UNCLASSIFIED" zoning to "RESIDENTIAL A".

Perspective of shop building to be constructed at 139 W. Main Street for Mr. Mullen was approved as recommended by the Planning and Zoning Commission upon motion of Mildred Bratzel, second by E. G. Scott, passed by unanimous vote.

Master plan for Scottsdale Agreement was reviewed by the Council. Attorney Phil Messinger was instructed to redraft the Agreement upon motion of Jim Matthews, second by Bill Schrader, passed by unanimous vote.

Two proposals for janitor service for the Town Hall was presented as follows:

\$129.00 per month to clean complete building every day; keep floors waxed and windows washed.
\$120.00 per month to clean complete building every day; keep floors waxed and windows washed.
\$100.00 per month to clean building every day with exception of Justice Court side.

\$90.00 per month to clean building every day with exception of Justice Court side.
\$50.00 per month to keep floors waxed and windows clean.

Town Manager was instructed to get a price on keeping floor waxed, cleaning windows and cleaning rest rooms weekly.

George Nordick was rehired to do yard work at \$1.50 per hour, upon motion of Bill Schrader, second by Mildred Bratzel, passed by unanimous vote.

Police Activity report for the months of April and May were presented and reviewed.

Letter of resignation from Henry O. Cooper as Chief Marshal was presented. Resignation was accepted with regret upon motion of Mildred Bratzel, second by Bill Schrader, passed by unanimous vote.

Motion was made by Jim Matthews, second by Mildred Bratzel, passed by unanimous vote to have Marshal Cooper's Police Badge made into a plaque and presented to Henry Cooper in behalf of the Police Officers and Council.

Councilman Jim Matthews requested that the passing of Ordinances be investigated requiring dust control provisions on commercial parking lots and driveways, and providing control of dogs.

Bid for police cars presented and reviewed. It was decided to call for the bids on Chevrolet and Plymouth cars.

Manager Gordon Allison reported on proposed Arizona State Retirement System for employees as follows:

Employee to pay 3% of salary
Employer to pay 3% of salary
Town would have to pay \$4,391.00 back service charge.

Towns annual payment would be \$487.00 for present employee's. Retirement plan is transferable. Employees are refunded any amount payed into retirement at  $2\frac{1}{2}\%$  interest.

Jim Matthews brought to attention a dangerous traffic situation on Thomas Road being created by allowing cars to come out both exit and entrance of the Drive In Theatre when show is over. It was decided to instruct Theatre owners to use only the exit for leaving theatre.

Town Manager informed that a couple wanted to move into the house at the sewer plant and perform certain duties at the plant in replacement of rent and that the house would have to be painted and repaired before being used. Town Manager was authorized to negotiate with interested party and require that they pay electricity used.

Claims 572 through 647 for the Town of Scottsdale were presented and approved to be paid on motion of E. G. Scott, second by Mildred Bratzel, passed by unanimous vote.

Claims 581 through 595 for Thunderbird Homes were presented and approved to be paid on motion of George Stroup, second by Mildred Bratzel, passed by unanimous vote.

Marlin Bixler was appointed as Town Magistrate at \$200.00 per month on motion of George Stroup, second by Jim Matthews, passed by unanimous vote.

Applications for Town Chief Marshal were reviewed. It was decided that the Police Chief be hired on a six (6) month probation period.

Bill Downing was hired as Chief Marshal for the Town of Scottsdale at a starting salary of \$500.00 per month upon motion of Mildred Bratzel, second by Bill Schrader, passed by unanimous vote.

No further business to come before the meeting, the meeting was adjourned at 12:00 o'clock P. M., upon motion of E. G. Scott, second by Mildred Bratzel, passed by unanimous vote.

Respectfully submitted,

Dorothy Setchum, Clerk

EXHIBIT #2

It was suggested to use citizen groups to help acquire street improvement districts and right-of-ways.

No further business to come before the meeting, the meeting was adjourned at 11:30 o'clock P.M., upon motion of É. G. Scott, second by Moya Kelley, passed by unanimous vote.

Respectfully submitted.

Dorothy // Ketchum, Clerk

Minutes of March 15, 1960

A special meeting of the Mayor and Council of the Town of Scottsdale was called to order by Mayor M. E. Kimsey, Tuesday, March 15, 1960, at 7:30 o'clock P. M., in the Town Hall.

Roll call:

Present:

Mayor M. E. Kimsey Councilwoman Moya Kelley Councilmen John Pickrell John Marron E. G. Scott Manager Gordon Allison Attorney George Song Clerk Dorothy Ketchum

William Schrader Austin Smith

Town Manager reported that John Hall and Forest Cox, subdivision. developers did not want to connect to the proposed McDowell Road sewer line because most of the homes had been completed in that area and that F.H.A. will not enforce subdividers to connect. He suggested that a 15 inch sewer line be extended for another half mile to serve the Cox, Hallcraft homes beyond Hayden which have not been built (approximately 525 homes). The cost would be approximately \$25,000.00 and the health department would require the homes to connect where there is no additional cost to the home owner.

The following points were brought out in discussion of the sewer line:

- . 1. There is now approximately 525 homes to be served in the area instead of proposed 2000 homes?
- How could the additional money be raised to extend the 15 inch line?
- 3. Could the line from Miller Road to Hayden Road be cut down to a 15 inch line to cut down costs? Check with Sam Philips if it would work.

Upon motion of John Marron, second by John Pickrell, passed by unanimous vote, William Haynes was given an increase in salary from \$288 to \$300, effective February 16, 1960, as recommended by the Street Supervisor and Town Manager.

Town Manager was authorized to hire two men to help install the gas street lights for a period of not more than 30 days, upon motion of John Marron, second by Austin Smith, passed by unanimous vote.

Sertoma Club was given permission to place a trailer in the city limits for a Youth Employment Office upon motion of Austin Smith, second by William Schrader, passed by unanimous vote.

Attorney Phil Messinger tendered his resignation as Town Attorney effective February 30, 1960. He informed he would like to carry out the Bond issue and improvement districts. Council was in agreement that Phil Messinger continue with the Bond Issue and Improvement Districts.

John Pickrell motioned to call for bids for gasoline storage tank pump and bulk delivery of gasoline from gas companys; also call for bids from service stations for supplying gas, oil and lubrication for the Towns Police Department and Street Department, second by William Schrader, passed by unanimous vote.

Moya Kelley made motion to convert the present Fire Insurance for the Town to a blanket policy with the present company, (effective installation date March 13, 1960), second by E. G. Scott. Canvas of the vote showed no vote for the motion. Action on the subject was delayed until investigated by the finance committee.

Motion was made by John Marron, second by William Schrader, passed by unanimous vote to modify provision 10 of the agreement for Architectural Services for the Municipal Building to read as follows:

The Architects agree to furnish without cost to the owner four (4) sets of specifications and blueprints of the drawing and shall furnish additional sets at cost upon request by the owner.

RESOLUTION NO. 114, A RESOLUTION APPROVING THE COMPLETED PLANNING DOCUMENTS PREPARED WITH AN ADVANCE FROM THE UNITED STATES OF AMERICA UNDER TERMS OF PUBLIC LAW 560, 83RD CONGRESS OF THE UNITED STATES, AS AMENDED, (Street Improvements), was adopted upon motion of Moya Kelley, second by John Pickrell, passed by unanimous vote.

Perspective of office building for Maxwell Dorne to be constructed on West Stetson, was approved as recommended by the Architectural Board, upon motion of E. G. Scott, second by William Schrader, passed by unanimous vote.

Town Manager informed that the County would like to have a list of what the Town would like to have the County include on a public works program.

**EXHIBIT #3** 



# ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY HAZARDOUS WASTE SECTION

#### ANNUAL FACILITY REGISTRATION FEE INVOICE

(and Facility Annual Report for SQGs)

irsuant to A.R.S. 49-113, interest will be charged if full payment is not received by the ectified due date. If you dispute the amount listed, please contact ADEQ as soon as saible. To reduce interest costs on an unpaid invoice, you may remit an amount that you lieve is not in dispute. However, if nonpayment is due to wilful neglect, you may suffer additional five percent penalty of up to twenty-five percent of the amount due for each anth or fraction of a month the amount is past due.

If you have questions about Hazardous Waste, call Gail Bliss at (602) 207-4212 or toll-free within Arizona at (800) 234-5677, extension 4212

If you have questions about payments, call Accounts Receivable at (602) 207-4751 or toll-free within Arizona at (800) 234-5677, extension 4751

arsuant to A.R.S. § 49-929 and 930, all hazardous waste transporters, hazardous waste generators, hazardous waste resource recovery facilities and hazardous waste treatment, storage and disposal facilities shall register annually with the Arizona Department of Environmental Quality and manual registration fee. Maximum annual payments of fees and taxes by mines are specified in A.R.S. § 49-282.01. Maximum annual syments of fees and taxes by resource recovery facilities are specified A.R.S. § 49-930.B.

eccount Number: 2645	Invoice Num	ber: 35574		
o: CITY OF SCOTTSDALE	EPA#: AZD981651276			
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SCOTTSDALE, AZ 85251	Due Date: March 1, 2000 2nd Notice! Past Due!			
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↓ This entire bottom portion	must be re	turned to ADE	Q. ↓ EQ Federal T	ax #866004791
Hazardous Waste Annua	l Facility Regist	tration Fee	Invoice #	35574
ITY OF SCOTTSDALE		Account Number:	2645	HWR
191 E SAN SALVADOR DRIVE		Period Covered:	2000	***************************************
COTTSDALE, AZ 85251	T)981651276	Due Date: 03/01/29		
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dard Industrial Classification (SIC) code(s): 9199	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			***
ber of POUNDS of Hazardous Waste shipped off-site during 1999:	150.0			
d carefully and check all boxes that apply and enter the required Andron Due line. Any difference between the fee paid and your actual ited at a later date. Additional amounts due may be subject to penalt Did not generate hazardous waste during 1999; no annual fee.  Conditionally exempt small quantity hazardous waste generator less than 100 kg (220 lbs.) of hazardous waste in any month due.  Small quantity hazardous waste generator which generated between 1,000 kg (2,200 lbs.) of hazardous waste in any month due.  Large quantity hazardous waste generator which generated months.	r which generated uring 1999; no ann ween 100 kg (220 ring 1999; enter \$1	ual fee	· · · · · · · · · · · · · · · · · · ·	0.00
Large quantity hazardous waste generator which generated mothan 1 kg (2.2 lbs.) of acute hazardous waste in any month dur.	ing 1999; enter \$3	00.00		
Hazardous waste transporter; enter \$200.00.  1. Hazardous waste treatment, storage and disposal facility: 2. Processing fee: tons received during 1999 2 3. Total Fee for treatment, storage, and disposal facility (add l	X \$2.00 per ton =	Base fee \$ 1.500.	00_	
Hazardous waste resource recovery facility:     Processing fee: tons received during 1999 3     Total Fee for resource recovery facility (add lines G1 and G2)	X \$2.00 per ton =	Base fee \$ 1.500.	00	* **
OUNT DUE (add lines A through G)			\$	0.00
Plus Paid Interest Charges and/or Other Adjustments Plus Unpaid Interest Charges as of 03/23/2000				
Minus Payments Received and/or Other Adjustments.				33.0
Total Balance Due (Please make check payable to State of Ariz	опа)			- A - A - A
Amount received by ADEQ		• • • • • • • • • • • • • • • • • • • •	· · · · · · · · · · · · · · · · · · ·	
The certify that the above information is true and correct to the best John Gold	en en		12000 4	80-312-55
Signature Name (print)		Dare		Phone Number
512 fee will be charged for any check not honored by the bank.		Do t	ot write below th	nis line
Make your check or money order payable to State of Ariz		Check Number:		
THIS FORM MUST ACCOMPANY YOUR REMITTAN	CE. Í	Received:		
	•			11

**EXHIBIT #4** 

- C. The preparer of specifications is not eligible to submit a bid or proposal on the solicitation for which the specification was prepared nor is the preparer eligible to supply any product to a bidder or offeror on the solicitation for which the specification was prepared; provided however, the Purchasing Division may make an exception to this provision when justified by the business practices of the applicable industry or it is otherwise in the best interest of the City. The Purchasing Division shall place in the solicitation file, a written determination, including all relevant facts in any case where an exception is made.
- D. The terms and conditions of Contracts for preparation of specifications shall reference the rule in Subsection C.

## Sec. 2-205 Recycled and energy consumptive materials; life cycle costing; environmental procurement.

Guidelines shall be established governing the review and approval of specifications for the procurement of selected materials based on considerations of recycling, energy conservation, life cycle costing and other environmental considerations.

#### PROCEDURES:

#### R2-205.1 Environmental Procurement Policy

- A. On December 16, 1991 the City Council adopted an Environmental Procurement Policy, hereinafter referred to as Policy, to ensure the purchase of products that are less toxic, conserve resources, are recyclable and have recycled content. The Policy requirements are:
  - Departments shall review the products and services they purchase to identify and purchase the most environmentally responsible products and services available for the intended purpose and meeting the performance requirements;
  - 2. Product testing and trial service is encouraged to evaluate environmentally responsible alternatives pursuant to established testing guidelines;
  - Specifications are not to exclude, without justification, environmentally responsible products such as recycled products, reusable products or products designed to be recycled and products consuming less resources;
  - 4. Preferences be given to environmentally responsible products and technologies in accordance with the established requirements for the applicable procurement process:
  - 5. City projects shall incorporate energy efficient fixtures, appliances and mechanical equipment in any new construction, remodel and retrofit of City Facilities.
- B. Environmental Planning & Design Staff shall provide support to Purchasing and Departmental Staffs in their efforts to meet the requirements of the Policy.
- C. Procedures and Guidelines may be established as necessary to ensure the continuation of a strong Environmental Procurement Program.

#### PROCEDURES:

#### P2-205.1 Hazardous Materials Procurement Guidelines

- A. The purpose of this Section is to minimize hazardous material purchases and hazardous waste generation throughout City operations, manage necessary hazardous materials and waste and eliminate all acutely hazardous waste streams. The City's Health and Safety Policy Manual includes examples and lists of the following categories of waste and a list of approved alternate materials.
- B. The following categories describe various types of materials that may only be purchased pursuant to the restrictions stated in each category:

Category 1: Includes all acutely hazardous materials and/or chemicals which result in the generation of acutely hazardous waste. Under unusual circumstances, a material from the category could be purchased, but only if a WRITTEN EXCEPTION is granted by the Environmental Planning & Design Office. Materials in this category include, but are not limited to, radioactive materials, 2-4-D pesticide, and paints containing fungicides.

Category 2: Includes materials for which there are no viable alternatives at present. The City commits to review these materials and replace them with non or less toxic alternatives when available. Each time a material from this Category is purchased, the purchaser is responsible to determine that no acceptable substitutes have been developed. Materials in this category include, but are not limited to, asbestos containing materials, freons, lead containing paints, and refrigerant gases, especially CFC gases.

Category 3: Includes materials that can be recycled. The City commits to recycling as many materials as possible. The materials in this category may only be purchased if a method for recycling exists or is developed upon purchase. Materials in this category include, but are not limited to, antifreeze, fluorescent lamps and ballasts, photographic chemicals and tires.

Category 4: Includes materials which are a necessity for certain City operations, but are not approved for use by any departments or staff other than those specifically designated. Materials in this category include, but are not limited to, fertilizers and soil conditioners, reagent grade chemicals, agricultural poisons and ammonia.

#### SURPLUS PERSONAL PROPERTY

#### Sec. 2-206 Disposition; Declaration

A. Surplus Personal Property Disposition.

The Director may sell, trade, transfer between departments or otherwise dispose of surplus personal property pursuant to established rules, except property defined as lost or abandoned in Chapter 23, Article III of the Scottsdale Revised Code, and property seized during the course of a police investigation shall not be subject to this code until such time as any State and Federal laws have been complied with and the property declared surplus by the Police Department.

B. Declaration.

Departments shall be responsible for property in their possession and as necessary may declare such property surplus and notify the Director of any such declaration. No

**EXHIBIT #5** 

## CITY OF SCOTTSDALE PARKS SYSTEM

FACILITY	ACRES	YEAR EST.	TYPE OF PARK
Eldorado	55	1967	Community
Agua Linda	5	1967	Neighborhood
Chesnutt	5	1967	Neighborhood
Civic Center Library		1968	Specialty
McKellips	18	1971	Community
Vista del Camino	40	1971	Community
Osborn	3	1971	Neighborhood
Paiute	8	1971	Neighborhood
Pima	6	1971	Neighborhood
Chaparral	74	1972	Community
Civic Center Mall	23	1973	Specialty
Lafayette	1	1974	Neighborhood
McCormick	30	1974	Specialty
Papago	1	1975	Neighborhood
Comanche	12	1976	Neighborhood
Shoshone	3	1976	Neighborhood
Zuni	3	1976	Neighborhood
Senior Center	<u>u</u>	1977	Specialty
Indian School	60	1978	Community
Inlet/Interceptor	117	1980	Specialty
Nature Area	4	1980	Specialty
Mt. View	20	1981	Community
Thomas Bike Stop	1	1981	Specialty
Club SAR	1	1984	Specialty
	10	1985	Neighborhood
Mescal		1985	Neighborhood
Thunderbird	11	1986	
Rotary	8	- Commence	Neighborhood
Scottsdale Ranch	42	1987	Community
Northsight	20	1987	Neighborhood
Mustang Library	10	1987	Specialty
Stadium	11	1991	Specialty
Horizon-Phase 1	24	1992	Community
Cholla	15	1993	Neighborhood
Aztec	7.2	1994	Neighborhood
Cactus	17	1994	Specialty
Grayhawk Neighborhood	13	1999	Neighborhood
Sonoran Hills	6.5		Neighborhood
McDowell Mtn. Ranch	4	1999	Neighborhood now(4)/Community total(27)
DC Ranch	20		Community
Apache	5		Neighborhood
Ironwood	4		Neighborhood
Stonegate	24		Neighborhood
La Mirada	9		Specialty
Grayhawk Community	51	2002	Community
Desert Mtn.	17	2004	Community
	7.00		
TOTAL Acreage	817.7		

## **EXHIBIT #6**

(Re-typed and original)

1	
2	IN THE SUPERIOR COURT OF THE STATE OF ARIZONA
3	IN AND FOR THE COUNT OF MARICOPA
4	,
5	GARBAGE SERVICE COMPANY, a
6	corporation, ) Plaintiff, )
7	vs. No. 140543
	(
8	CITY OF SCOTTSDALE, a https://www.nicipal.corporation.
9	Defendant.
10 11	
12	
13	
14	
15	
16	DEPOSITION OF MR. L. E. REDMAN
17	
18	
19	
20	
21	
22	Phoenix, Arizona September 21, 1962
23	September 21, 1902
24	
25	145
26	

BE IT REMEMBERED that pursuant to stipulation, the deposition of Mr. L.E. Reman, Plaintiff herein, was taken upon cross examination by the Defendant before Robert D. Greenfield, a Notary Public in and for the County of Maricopa, State of Arizona, at the offices of Minne & Sorenson, 6th Floor, Luhrs Building, Phoenix, Arizona, on the 21st day of September, 1962, commencing at the hour of 1:30 o'clock p.m. of said day.

The Plaintiff was represented by its attorneys, Messrs. Minne & Sorenson, by Mr. Richard Minne and Mr. Joseph Contreres; and Messrs. Lewis, Rocca, Scoville, Beauchamp & Linton, by Mr. John P. Frank.

The Defendant was represented by its attorney, Mr. Osmond Burton, Jr.

#### STIPULATION

IT WAS STIPULATED by and between the parties to the above entitled action through their respective attorneys that the deposition of Mr. L. E. Redman may be taken upon crossexamination before Robert D. Greenfield, a Notary Public in and for the County of Maricopa, State of Arizona, at the offices of Minne & Sorenson, 6th Floor, Luhrs Building, Phoenix, Arizona, on the 21st day of September, 1962, commencing at the hour of 1:30 o'clock p.m. of said day.

except as to form of questions or answers and except as to errors which might be obviated or cured at the time of the taking of the deposition, are reserved until the time of trial. All other formalities required by law for the taking and returning of depositions are waived, with the exception that the deponent may sign said deposition once only on the last page thereof.

L. E. REDMAN, a witness of lawful age, being first duly sworn upon his oath by the Notary to testify to the whole truth and nothing but the truth, testified as follows:

#### CROSS-EXAMINATION

#### BY MR. BURTON:

- Q Mr. Redman, would you state your full name please?
  - A Lawrence Edward Redman.
  - Q And where do you reside?
  - A 3102 E. Turney.
  - Q In the City of Phoenix, is that right?
  - A Yes.
- Q How long have you been associated with the Garbage Service Company?
  - A About four years and three months.
- Q And prior to that, what business were you involved in?
  - A I was in the used car business.
- Q In other words, this approximately four years of which you speak is the extent of your experience in the garbage business, is that correct?

A Oh, I worked for Cal's dad for about a month or two back in 1928.

Q By Cal, you mean Mr. Estes senior,
Mr. Estes having been in the garbage business
before him?

- A Yes. Been in the business since 1926.
- Q What is your present position with the company?
  - A Resident manager.
- Q Can you give me a brief run-down of the organization of Garbage Service Company, first of all on a national basis, and then here in the State of Arizona?

A Well, Garbage Service Company is located at 2005 East Adams, which covers most of Maricopa County.

We have a business in St. Petersburg, Florida known as Modern Waste, and we have a place in Miami, Florida, known as Sanitation Associates.

- Q Would you consider Phoenix to be the home base of all Mr. Estes's operations?
  - A It is the home base.
- Q And Florida and Arizona are the only States in which you operate?
- A At the present. He just sold Santa Barbara about two years ago.

10. 

Q Now, Mr. Redman, how many municipalities does Garbarge Service have in this State, in the State of Arizona?

A Sun City. Youngstown. Glendale. Phoenix. Scottsdale.

Well, Apache Junction, I don't believe that is incorporated, is it?

Q Doesn't make any difference.

Now, with reference to the contract, and we'll limit it for the purpose of this question to the contract for garbage service which is the subject of this dispute, how many of the municipalities that you have just mentioned have similar contracts?

A Glendale, Phoenix, Sun City and Youngstown.

Q Do they all provide that the municipality pay the cost of the service?

A That the municipality pays the cost of service?

Q To make myself clear, do you bill the city or town and do they pay you or do you operate in the city under contract and bill the residents and businesses directly.

A Well, I'll clarify that. With Youngstown and Sun City we gave a proposal the same as we gave

Scottsdale and Glendale, and they asked who would take the loss in case someone didn't pay a garbage bill. They were going to do their own billing and collecting similar to Glendale, when they found out they had to take a loss they said, "We don't want it, you take the loss."

Q In other words, then, you do have a contract with Youngstown and Sun City, but you bill the customers in those two places?

A Bill and collect.

Q And collect.

Now, for what period of time, to your knowledge, has Garbage Service Company served the City of Scottsdale, or the general area now occupied by the City of Scottsdale?

A I would say, and I can't be too accurate, they have served the surrounding area, I believe, since '46 or '7, but Scottsdale itself I believe was in 1954, which is only about fifty or sixty per cent of Scottsdale that took our service.

Q Was this on the basis of a contract with the City?

A No.

Q You just served fifty or sixty percent of the residents on a private contract basis? You would contract separately with each resident on --

A We had a base rate for all residential units.

Q To your knowledge, how many contracts has Garbage Service had with the City of Scottsdale?

- A Signed contracts, I would say two.
- Q And when were they executed?
- A May 1<sup>st</sup>, 1961.
- Q And by saying two signed contracts, you mean the two that are the subject of this lawsuit?
  - A Right. Land Fill and this City.
- Q Mr. Redman, were you present during any or all of the negotiations for the contracts which are the subject of this dispute?
- A I wouldn't say at all of them, unless they had some when I was in Florida, I don't think they did. I wrote the first proposal for the City of Scottsdale.
  - Q And to whom did you submit this proposal?
- A The first proposal was to part of the Council and part of the residents that came to the City Hall.
- Q Could you clarify that a little bit for me?
- A Well, at the time there was approximately three Council members and eight or ten people total that live in Scottsdale that were pushing for a

universal service.

In other words, they weren't happy with the service they had, because a lot of them, a lot of those people wouldn't take it, and it was all cluttered up, and one guy would try to keep his yard clean and the other guy didn't do anything.

They were asking for a universal service.

Q Now, when you mention universal service, and I am referring to one of your answers, you say you served about approximately sixty per cent of Scottsdale.

Was there another garbage and trash collecting company or individual in the Scottsdale area at that time who was collecting garbage?

- A Not legally, no. There was one there.
- Q Who was that?
- A Johnny Visco.
- Q And we're talking now about early 1959, is that correct?
  - A I believe you go back to '59.
- Q You say not legally. Is it your contention then, that Mr. Visco has never legally collected in the Scottsdale area?
- A The Court says he hasn't. He was given a permit through the corporation Commission to haul cardboard.

Q Are you personally acquainted with the contracts which Garbage Service has with other municipalities in the State of Arizona?

A Yes.

11.

Q Have you been involved in the negotiations for those contracts?

A Yes.

Q Now, would you explain to me the manner in which your company arrived at its rates for residential and commercial collections?

A You arrive at your rates on a residential unit very simply, but you go into commercial, and you have got to figure the volume, which on all commercial accounts we offer fifteen days, and if they have two yards, three yards or ten yards in fifteen days we set a rate of what their average yardage will be. If it's cans or whether it's boxes, like Earl's Market, it's based on a yardage basis. In fact, most of Scottsdale is on your commercial accounts.

Q Now, are we talking about rate per individual customer or are we talking about a rate based for a given community, and I'm restricting this once again to commercial?

A I just answered your question. On residential units, it's based not on the size lot

they have. If they exceed say 80 or 90 or 150 feet, then they will pay an additional amount for it, but say a 60 or 70 foot lot, these don't -- your rate is set like in Youngstown is \$2.50 per residence or unit, and that is garbage and trash, Sun City is the same way.

Q Does that now vary from lot to lot, or do you average the lots out in arriving at this figure?

A No. Just like I said, the average lot will run -- now, in the City of Phoenix, and I think it is also true in Scottsdale, I don't believe you can build on a lot that is less than 60 foot, a minimum of 60 foot in Scottsdale.

- Q Approximately?
- A. Yes.
- Q Now, are you limited in your rates by the Corporation Commission?
  - A Yes.
- Q And what formula do you use in applying the Corporation Commission's limitations to the rates which you charge for commercial service in Scottsdale?

A We have a rate structure. I don't have it with me. Scottsdale has a rate structure which is part of their contract.

 Q Was this rate structure approved by the Corporation Commission?

A Yes.

Q Do you have a set figure limitation on commercial collection in Maricopa County -- excuse me, within one of the areas set out -- or that the Corporation Commission set out in Maricopa County regarding commercial collection?

A Repeat that question, would you?

Q I ended up a little confused myself.

Isn't it true that the Corporation Commission fixes a specific rate limitation for commercial collection?

A Yes, they do. But, you might clarify that too.

We could give once a week service. We can give twice a week service, four times a week, five or six days.

We can give you six days service which will change your rates, depending on the volume you set out.

Q Your limitations from the Corporation Commission, however, is based on volume, isn't that correct?

A Oh, I wouldn't say it was, no.

When you say volume, you are talking about

say a large amount like a store will have.

Say one store will accumulate one cubic yard a day, then the next store may accumulate four yards a day, but your base rate is set for cubic yard, even if a guy only has four cans. It's still set the same way.

- Q Do you now charge the commercial accounts in the City of Scottsdale on the number of cubic yards you carry away from each place of business?
  - A Right.
- Q Regardless of the number of times per week you collect from them?
- A It's up to the individual customer how many times he wants to be picked up a week.
- Q If you collected, hypothetically, two cubic yards from one place of business on Friday, only once a week, would that merchant pay you the same as if you collected the same two cubic yards over six days, Monday through Saturday?
  - A. Would he pay the same?
  - Q Yes.
  - A My answer would be no he wouldn't.
  - Q He would pay you more, isn't that correct?
  - A. Why sure he would.
- Q Now, prior to the time that you computed your rate scale of for the City of Scottsdale

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which is contained in one of these computed contracts, did you or your company conduct an investigation or survey upon which you base the averages of which you speak?

A Yes. We made a survey in Scottsdale, which, I think, at the time the contract was signed there were 10,040 people in Scottsdale, in the Scottsdale City limits, which is an estimate, I think, of 3300 homes, I believe that is how many were in the City limits at that time.

- Q At that time that you made --
- A The first survey.
- Q That formed the basis of your rates for this particular contract?
  - A Right.
  - Q Now, Mr. Redman, if the population of the City of Scottsdale had been 50,000 at the time you made your survey, would the rates have been lower?
    - A If it had been 50,000?
    - Q Yes, sir.
    - MR. MINNE: If you know.
    - A I would say no.
    - Q Why not?
  - A On account of the length of haul that we have to go from Scottsdale to the land fill.

Q Now, in an earlier conversation between yourself and Mr. Williams, the Scottsdale City Manager, and Mr. Estes and myself, Mr. Estes made the statement that a vacancy factor had been computed into the total number of residences in the City of Scottsdale.

In the process of computing a rate scale for Scottsdale today, can you explain to me the way that that was accomplished?

A It's very simple.

MR. FRANK: You kind of moved from a conversation with Mr. Estes --

MR. BURTON: Mr. Redman was present.

MR. FRANK: Could you ask him simply, if you want to talk about vacancies, would you ask him about the vacancy factor, and then -

Q MR. BURTON: This is what I want. I would like for you to explain what bearing the vacancy factor, if any, had on the establishment of a rate scale.

A You ask quite a bit. I have several rentals of my own.

We wrote this contract, occupied and unoccupied, in which an unoccupied house has more refuse than one that is occupied. You can believe that or not.

Any time a house is vacant, if you keep that house rented - I have two of mine, because my taxes are little high, you go out and trim the hedge. You mow the lawn and leave all sorts of debris back of the house or inside the house. You haul that out.

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Say the house is vacant for two weeks or thirty days. You mow the lawn again. You water it. Then the people that move in usually have a moving van or moving van cartons and all that stuff. You will haul more debris on the average from an unoccupied house than you do from one that is occupied.

Q Then, let's pursue this one step further.

First of all, do you recall any precise number, percentage, that was applied to that rate scale as a vacancy factor?

In other words, was it five percent, ten percent, fifteen percent?

A Well, there was an estimate given by,
I believe, it was McCormick in Scottsdale where
he said that he had several apartments, I guess,
still there, you may know the man, I don't, but
he said his run from two to six per cent unoccupied.
He has several apartments.

Q But do you now recall what figure was used

in this particular contract?

A No, I don't.

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Q Now, after your explanation of the effect of vacant residences, may we assume that you increased your cost of service by the vacancy factor or because of the vacancy factor you decreased it?

A Neither one.

Q In other words, once again, hypothetically, if there were 10,000 residences, places of residence in the City of Scottsdale, and we could establish that ten per cent of these residences were vacant at all times, you total billing to the City of Scottsdale would not be reduced by ten per cent, is that correct?

A No, it wouldn't be.

MR. FRANK: Would be or would not be?

THE WITNESS: Would not be. The universal service we have Scottsdale was one figure, and that is what was asked for.

MR. BURTON: Do you recall that Mr. Estes said that the figure was computed on the basis of a vacancy factor, and this was taken into consideration, and that the total cost figure was reduced by that amount?

A I remember Mr. Estes repeating what was

made at the City of Phoenix at that meeting, you and Williams and they figured ten per cent vacancies in the City of Phoenix at the last meeting we had. It was in regards to Scottsdale. If you remember, Mr. Williams said that he didn't know what the percentage of vacancies were. He said that in the particular house he moved into it was vacant for six or seven months previous to him occupying it.

Q Now, switching back again to the previous subject.

Can you recall the length of time that you negotiated with the City of Scottsdale and the citizens of Scottsdale prior to the actual discussion of the actual contract we are talking about?

A Oh, I would say approximately seven or eight months. We had about four different meetings.

Q And during this time were you meeting primarily with the Council or with the City Manager?

A Well, we met both. When Allison was there, I met with them three or four different times, and then after he was fired it was some time before they had another manager. It was

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Bob McNutt. I met with Jim Smith on several different occassions, and then on Council night we would go over and go before the Council on our proposal.

Q Now, I apologize for jumping back and forth, but I would like to switch to another subject.

Now, as to the other contracts with Arizona municipalities, which you have mentioned, do you know of your own knowledge what the terms of these agreements were?

A Yes, I do.

Q What are the terms of those agreements to the best of your recollection?

MR. MINNE: Wouldn't the agreements speak for themselves, Counsel?

We'll have them. We have already indicated that they will be a part of the pre-trial.

MR. BURTON: You would object, then, to his answering that?

MR. MINNE: Well, I think it is immaterial.

The agreements themselves are the best evidence.

MR BURTON: With reference to one particular agreement, what is your understanding as to the terms of the Glendale agreement?

MR. BURTON: Do you have any objections to

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that? To the terms of the Glendale agreement?

MR. MINNE: It's immaterial. We will object for that reason.

A Glendale, if I'm not mistaken is a threeyear contract.

- Q MR. BURTON: It is your understanding that there is a clause in that contract that the term of it is for three year, is that correct?
  - A Right.
- Q And is it your understanding under the Glendale contract that the Garbage Service Company is entitled to charge on the basis of all residential units in the City, occupied or unoccupied?

MR. MINNE: We will make the same objection, immaterial.

- A Right.
- Q Then, can you exlain to me --

MR. BURTON: The same objection will continue, I presume.

Q MR. BURTON: -- why in the Glendale agreement there is a provision in paragraph four A, every three months Garbage Service Company and the City of Glendale will conduct an actual count of occupied residential units?

MR. MINNE: Same objection on the grounds that

it is immaterial.

Q MR. BURTON: Can you answer that or not?

If not -

A He said it was immaterial.

MR. MINNE: You can answer it.

O MR. BURTON: He asked you to answer it.

A Repeat that question.

Q Can you explain to me why there is a provision in the Glendale contract that the City and the Company will conduct an actual count every three months of occupied residential units?

A That was put in the contract which was signed by the City of Glendale, and then, after signing the contract, Mr. Stan Van DePutte said They were -- we made one physical count. Then he asked us after that to come to their Building Department and take it off that record where if they had built a new home and put water and sewer in --

- Q When the original physical count was conducted, was it of all dwellings or only occupied dwellings?
  - A Occupied and unoccupied.
- Q Can you tell me what the standard fee for residential units is in the City of Glendale?
  - A Yes, sir.

Q How much is that?

MR. MINNE: May there be a continuing objection to this line of interrogation, so that we won't have to clutter up the records with a series of objections.

Go ahead and answer it.

- Q MR. BURTON: What is the rate per residential unit?
  - A \$1.95.

Q \$1.95. Mr. Redman, why is that lower than the City of Scottsdale?

A Very simple. The City of Glendale agreed to pay us before their land fill was opened \$2.50 per load; \$1.95 per Res unit, and we dump in their land fill free of charge, no charge to the Garbage Service Company.

- Q . What about the provision in the Glendale agreement that you only pick up trash every two weeks. Does that have any bearing on the rate?
  - A Sure it does.
- Q Do you, in fact, pick up trash in Glendale the same way you do in Scottsdale.
  - A No.
- Q Now, back out of Mr. Minne's objection.

  Mr. Redman, would you explain your operation in the

  City of Scottsdale particularly as to the number of

trucks and number of personnel that are involved?

A I think we are operating now about eleven or twelve trucks in the City of Scottsdale. We have about thirty-six on garbage trucks and about five or six on the land fill.

Q Would you repeat that. I'm sorry, I didn't follow you.

A We got about thirty-six on garbage trucks and five or six on the land fill.

Q I see. During the course of your working day in the City of Scottsdale, do any of the trucks go outside of the City limits to collect garbage and or trash from the City of Phoenix, Tempe or Maricopa County?

A Do any of them?

Q Yes, sir.

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A I would have to check a map of these. I don't know. I don't have a map with me. Possibly do.

Q Maybe I can rephrase my question.

Are these trucks, because of the nature of their routes, restricted to the City limits of Scottsdale, or do their routes extend beyond the limits of the City of Scottsdale in the normal limit of their operation?

A I couldn't answer it unless I had a map

here. But, the majority of what we pick up, which is stationed in Scottsdale, the land fill, are the trucks that work out of Scottsdale. I would say ninety-five or ninety-six percent. It may even be closer to a hundred percent. Without a map I couldn't tell you exactly.

Q Now, at the present time how many commercial establishments is Garbage Service Company serving in the City of Scottsdale?

A I couldn't answer that. We just finished a survey.

- Q Can you approximate for me?
- A Oh, I think Eddie's better qualified.
- Q Mr. O'Brien could answer that question better?
- A Yes.

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- Q Do you know approximately or what the average is of the pickups that are made at commercial establishments, or does that vary, so that would be --
- A We had a count awhile ago. I forget what the amount was. I believe sixty or sixty-five, if I'm not mistaken. We have added several to that since that.
  - Q Individual commercial accounts?
  - A Individual commercial accounts.

Q In order to rephrase my last question, does this range everywhere from one pickup a week to six pickups a week, depending on the size of the commercial establishment?

- A Depending on the individual, what he wants.
- Q Now, who determines the number of pickups for each commercial establishment?
  - A Who determines what?
- Q The number of times you pick up garbage and trash from a commercial establishment?
  - A The man that owns the store.
- Q And, Mr. Redman, is Garbage Service Company now pursuing a policy, a sales policy, of trying to sell more service to commercial units?

Do you refer to them the argument that since the owner doesn't have to pay, but it is included in the City tax rate, it won't make any difference to them how many pickups they have?

MR. FRANK: Could I ask for a division of the question, please. The first half of the question refers to conducting a campaign for commercial accounts, and the second half -

MR. BURTON: Let me rephrase the question.

It doesn't sound right.

Q MR. BURTON: Mr. Redman, do you have representatives in Scottsdale who contact potential

customers?

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A I don't know whether they are potential.
We contact all the customers we can possibly get.

- Q You have a constant sales program all of the time?
  - A If we don't, the boss would fire us.
- Q And this includes, in fact, is limited to commercial establishments now that you have all the residential business in Scottsdale?
- A It would have to be. On the universal service, they are the only ones left.
- Q Now, is it the company's desire, since you make more money this way, to have as many pickups per week at commercial establishments as you can?
- A That is not a very good question, but a man doesn't ask for a pickup unless he needs it.

In other words, if he has got a place in his store, in the back of his store, if he has got place to store cardboard or boxes, whatever he has got, he don't go to the trouble of taking those out every day if twice a week will render the service to him. He'll put it out twice instead of six times.

- Q Who reprsents Garbage Service in Scottsdale for this purpose?
  - A The names of individuals?

- Α
  - A Jack Berger.

- Q How do you spell the last name?
- A B-e-r-g-e-r. Eddie O'Brien. Bill Burrell, B-u-r-r-e-l-l.
- Q Now, to your knowledge, Mr. Redman, do any of these individuals approach commercial customers with the argument that their number of pickups should be increased and that it wouldn't cost them, individually, any more to have them increased?
  - A No.
- Q But in the event that they are increased for any reason, does the bill to the City of Scottsdale increase?
  - A Repeat the question, will you please?
- Q I think I -- I think it's okay. I think you already answered it.
  - A I thought I did.
- Q What is the average age of the equipment now being used in the City of Scottsdale?
- A We have got four '61's. There are two '61 GMC's. The '61 Internationals. Four '60 Fords. I believe there is we are using approximately either four or five '56 GMC's at the yards, and there are a couple of spares that we use, set up in case one of the others break

down.

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Q Does this equipment stay in the Scottdale area or is it rotated with the other equipment in the Valley?

- A It stays in Scottsdale.
- Q Has your Company run any survey to determine the average cost of operating that equipment.
  - A I would hope so.
- Q Are you acquainted with such cost figures?
  - A On operating equipment?
  - Q Yes.
  - A It costs us about --

MR. MINNE: For the purpose of the record, I will object to this on the grounds that this is immaterial.

Go ahead and answer the question.

- A About eleven cents a mile.
- Q MR. BURTON: This is for the equipment alone or are you talking -
- A You asked for the equipment. That is what I gave you.
  - Q Fine. Fine.

Now, can you tell me what wages you pay to your supervisors in the Scottsdale area?

A I think it's \$525 a month. I believe that

is right.

Q Now, what aside from your truck drives, and helpers, what supervisory personnel do you have in the area?

A We have three. We have three in the City of Scottsdale. We have one over the landfill.

Q And you have only four people in addition to your actual truck drivers and helpers, is that correct?

A In addition to myself.

Q Now, then, how much do you pay your truck drivers?

A Well, that depends. Semi's, I believe it's \$2.05 or \$2.10 per hour on semi's, and I believe on your straight garbage trucks the rate is \$1.92. Isn't that it? We raised it in the last - they raised us. We had to raise on insurance and also on uniforms.

Q Now, how much do you pay the helpers that ride on your trucks?

A I believe they start at \$1.47 or \$1.48 an hour.

Q And up to what?

A If we keep them, I believe, it runs to \$1.70 approximately.

Q Now, are you acquainted with the lease that

Garbage Service Company has executed with the
Tribal Council for the land presently being used
for land fill purposes by Garbage Service in
connection with its contract with the City of
Scottsdale?

A I made it.

Q How much are you paying for it?

MR. MINNE: Same objection.

MR. FRANK: I take it we have a stipulation as to a continuing objection and there is no need to object?

MR. BURTON: That is satisfactory. I have no objection to that.

MR. MINNE: Now, you may answer the question.

A We pay one year in advance which is \$2400, and I think it's \$200 a month after that.

Q A year in advance, but you are paying \$200 a month for that land?

A Yes. We had to. The Government asked for the \$2400 to be put up.

Q Now, you stated this before, but just for review. How many people do you have working out there, five?

A Well, I think there is five. See, we have two fill, and one water truck does both of them. Part of the time we have two CAT

operators, and part of the time just one, and then you have a spotter. We have a - I think it's two or three night watchman around the clock.

Q How much do you pay each of these individuals? How much do you pay your CAT operator?

A Union scale. I believe it's \$550.00 Mo. plus his allowance for uniforms and a two-week vacation per year.

Q How about your spotters?

A I believe the spotters draw \$2.50. That is also under the Union.

Q Your watchmen?

A The watchmen is based on \$1.25 an hour.

Q The man who operates your water truck?

A He makes \$525 or \$530 a month. In fact, there are two water trucks that would be there at all times.

Q You mentioned two fills operating and I wonder if they are both used for Scottsdale?

A No.

O Who is the other one for?

A The City of Phoenix and Garbage Service Company.

Q Are both on the same parcel of property?

A No.

Q In other words, when you made the statement

earlier that you were paying \$200 a month to the Government on this İndian land, this referred only to the City of Scottsdale?

- A Right. We own the other property.
- Q I see.

- A Eighty acres.
- Q I see. Now, is the Scottsdale land fill used only for the purpose of dumping Scottsdale's refuse and serving the citizens of Scottsdale as provided by the contract?
  - A Primarily. I would say ninety-six percent.
  - Q What is the other four percent?
- A Well, on your commercials, this still comes out of Scottsdale. Still comes out of the Scottsdale City limit.
- Q Even those customers that you charge for disposing of their refuse, the conclusion is that it would be at least more than ninety-five percent coming out of the City of Scottsdale?
- A Oh, sure. It fact, right now we are getting twenty-five or thirty cars a day, that is, station wagons and passenger cars, that we don't charge anything. Those are out of Scottsdale.
- Q How far is the landfill from the center of Scottsdale?
  - A The center of Scottsdale?

1 Yes, sir. I would say it's about five and a half 2 3 miles. But less than three miles from the outer 4 5 boundary of Scottsdale? I checked it not too long ago. Just a 6 fraction -- from the City limits of Scottsdale two 7 and five-tenths I believe it was. 8 Q Mr. Redman, what profit did Garbage Service 9 Company realize last year in its contract with the 10 City of Scottsdale? 11 Objection. At this time, may we MR. FRANK: 12 go off the record for a moment? 13 (Whereupon, a brief discussion was had off 14 the record.) 15 MR. FRANK: The record will note an 16 objection to this question. 17 MR. BURTON: What is your answer, then, Q 18 Mr. Redman? 19 I don't know. Α 20 Who handles the books of the company, 21 Mr. Redman? 22 Al Kim is company comptroller. Α 23 Does he do all of it for Garbage Service 24 Company or does he have it directly under his 25 control? 26 27

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A It's between him and Ferg. Ferg is his office manager.

- Q Would you give me the full name of Ferg?
- A Ferg Spowart. Something like that.
- Q What do you make, Mr. Redman. How much money do you make per year from Garbage Service?

MR. MINNE: It is immaterial, and I will instruct him not to answer.

MR. BURTON: I have no further questions.

MR. MINNE: We have no questions.

(Thereupon, at 3:00 o'clock p. m. this deposition was concluded.)

L.E. Redman

STATE OF ARIZONA }
COUNTY OF MARICOPA }

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BE IT KNOWN that I took the foregoing deposition pursuant to the stipulation; that I was then and there a Notary Public in and for the County of Maricopa, State of Arizona, and by virtue threreof authorized to administer an oath; that the witness before testifying was duly sworn by me to testify to the whole truth and nothing but the truth; that said deposition was reduced to writing under my direction, and the foregoing thirty-four typewritten pages constitute a full, true and accurate transcript of the testimony of said witness, to the best of my skill and ability.

WITNESS my hand and seal of office this \_\_\_\_\_\_day of September, 1962.

/s/Robert D. Greenfield, Notary Public

My commission expires
April 1, 1966

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA per per il set IN AND FOR THE COUNTY OF MARICOPA 5 GARBAGE SERVICE COMPANY, a corporation,
6 Plaintiff,
7 vs.
8 CITY OF SCOTTSDALE, a municipal corporation, 5 | GARBAGE SERVICE COMPANY, a Defendant. -10 11 15 DEPOSITION OF MR. L. E. REDIAN 7:00 18 19 20 21 17. Phoenix, Arizona September 21, 1962 23 25 26

2 -BI IT REMEMBERED that pursuant to stipul the deposition of Mr. L. E. Réman, Plaintiff herein, was taken upon cross-examination by the Defendant before Robert D. Greenfield, a Notary Public in and for the County of Maricopa, State or Arizona, at the offices of Minne & Sorenson, 10 oth Ploor, Luhrs Building, Phocnix, Arizona, on the 21st diffor September, 1962, commencing at a 11 the hour of 1:30 o'clock p. m. of said day. The Plaintiff was represented by its 13 with the short of the ottorno s, Messrs Minne & Sorenson, by ir. Richard Winney and Fr. Joseph Contrers; sind Mesors: Tewis, Rocc., Scoville, Beauchimp & Lint ba-24n. John 2. Brank. 17 The Dofendent Mas represented owlts 18 27.3 torney, Mr. Osmond Burton, Jr. 19 20 21 25

IPULATION : 4 IT WAS STIPULATED by and between the parties 5 to the above entitled action through their respect 「我」 47.5人 **事**世纪的 tive attorneys that the deposition of .7 我没有我的**我**身子的女子也是两种 Mr. L.E. Redman may be taken upon cross-8 STORY OF STREET STREET, STORY STREET 4.5 examination before Robert D. Greenfield, a Notary , 9 域 医性性性缺陷的现在分词 Public in and for the County of Maricopa, State of 10 Arizona, at the offices of Minne & Sorenson, 11. 6th Floor, Luhrs Building, Phoenix, Arizona, on 12 6 STORY OF WARRY PLEASE FOR THE the 21st day of September, 1962, commencing at the 13 hour of 1:30 o'clock o m. of said day and the 14 IT WAS FURTHER STIPULATED that all objections 15 except as to form of questions or unswers and 16 THE REPORT OF THE PARTY OF THE except as to arrors which might be obvisted for 17 25 cured at the time of the taking of the deposition 18 **新疆市里大学** are reserved until the time of trial All-other 19 formalities required by law for the taking and 20 returning of depositions are vaived, with the 20. 21 2.27 exception that the deponent may sign said deposi-22. ...... ion once only on the last page thereof of 23: 24 25

A Oh, I worked for Cal's dad for about a 1 2 month or two back in 1928. @ By Cal, you mean Mr. Estes senior, 4 Mr. Estes having been in the garbage business 5 before him? 6. 1 A Yes. Been in business since 1926. 6 Q What is your present position with the company? · . . A. Resident manager. Can you give me a brief run-down of the 10 organization of Garbage Service Company, first of 11 4 12 all on a nation I basis, and then here in the State of Arisona? - Area----A we'ell, Garbage, Service Compunying, located 14 t 2005 East Adams, which covers most of M ricopa 15 We have a business in St. Potersburg, Torida 17 known as Midern Wiste, and we have a place in 18 Mlami, Florida, known as Sanitation Associates. 19 O Would you consider Phoenix to be the home 25.11 20 1251 base of all of Mr. Estes soperutions? 17 21 . Al. It 4s the home base. 22 And Florida and Arizona are the only 23: States in Which you operate? 24 And the present. He just sold Sant 25 27 Barbara about two years ago. 26

Now, Mr. Redman, how many municipalities 1 does Garbage Service have in this State, in the State of Arizona? A Sun City. Youngstown. Glendale. Scottsdale. Well, Apache Junction, I don't believe that incorporated, is it? Q Doesn't make any difference. В Now, with reference to the contract, and .9 well limit t for the purpose of this question to 10 the contract for garbage service which is the 11 subject of this dispute, how many of the municipalities that you have just menuioned have similar contracts: A Glandale, Phoenix, Sun City and 15 16. O Do they ill provide that the municipalit 17 pay the cost of the service: 18 That the municipality pays the cost 19 service? AMV 1957年 英國共產黨 20 o nice myself clear, do you bill the cit 21: or town and do they pay you or do you operate in 22 the city under a contract and bill the residents and businesses directly. A Well, I'll clarify that . With Youngstown 25 and Sun City we gave a proposal the same

Scottsdale and Glendale, and they asked who would take the loss in case someone didn't pay a garbage. bill. They were going to do their own billing and collecting similar to Glendale, when they found out they had to take a loss they said, "We don't want it, you take the loss." C In other words, then, you do have a contract with Youngstown and Sun City, but you --8 bill the customers in those two places? 9 A Bill and collect. 10 Q And collect. 11 Now, for what period of time, to your moviledge, has Garbage Service Company served the City of Scottsdale, or the general area now occupied by the City of Scottsdales A I would say, and I can't be too accurate; the have served the surrounding area, I believe, sinon '46 or 17, but Scottsd le itself I believe was in 1954, which is only about fifty or sixty 19 per cont of Scottsdule that took our service. 20 on the basis of 2-contract wit 21 You just served fifty or sixty percent of 24 the residents on a private contract basis? Syou would contract separately with each resident on

We had a base rate for all residential units. O To your knowledge, how many contracts has Garbage Service had with the City of Scottsdale? A Signed contracts, I would say two Q And when were they executed? A May 1st, 1961. Q And by saying two signed contracts, you moun the two that are the subject of this lawsuit? . Re Right. Land Fill and this City. 10 O Mr. Rodman, were you present during any for 11 all of the negotiations for the contracts which are the subject of this dispute? I wouldn't say at all of them, unless they 14 had some when I was in Florid , I don't think the did. I wrote the first proposal for the City of 16 Scottsdile: And to whole did fou hubble this proposal A The Tirst proposal was to part of the Council and part of the residents that cameato the City Hali. 21 Could you clarify that a little bit for , whiell, at that time there was approximatel Council members and eight or ten people for A 1.4 that live in Scottsdale that were pushing for

universal service. In other words, they weren't happy with the service they had, because a lot of them, a lot of those people wouldn't take it, and it was all cluttered up, and one guy would try to keep his yard clean and the other guy didn't do anything. They were asking for a universal service. Now, when you mention universal service, and I am referring to one of your answers, you say you served about approximately sixty per cent of Scottsdale. 11 Was there another garbage and trash collecting company or individual in the Scottsdale are time who was collecting garbage? Not legally, no. There was one there. Catino was that? Λ Johnny Visco. 17 SafAnd we're talking now about early 1959, is that correct? A T believe you go back to 159. 20-You say not legally. Is it your contention then, that Mr. Visco has never legally collected in the Scottadele area? 23 A. The Court says he hasn't. He was given a 24 permit through the corporation Commission to haul cardioard.

1 Q Are you personally acquainted with the
2 contracts which Carbage Service has with other
3 municipalities in the State of Arizona;
4 A Yes.

Have you been involved in the negotiations for those contracts?

A Yes.

O Now, would you explain to me the manner in which your company arrived at its rates for residential and commercial collections?

A You arrive at your rates on a residential unit very simply, but you go into commercial, and you have got to figure the volume, which on all they have two yards, three yards or ten yards in fifteen days we set a rate of what their average yardage will be all it's cans or whether it's boxes, like Earl's Market, it's based on a yardage basis. In fact, most of Scottsdale is on your commercial accounts.

Now, are we talking about rate per individual customer or are we talking about rate per rate based for a given community, and I'm ratricting this once again to commercial?

residential units it's based not on the size lot

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· 1
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they have. If they exceed say 80 or 90 or 150
 1
   feet, then they will pay an additional amount for
   it, but say a 60 or 70 foot lot, these don't
   your rate is set like in Youngstown is $2.50 per
   residence and unit, and that is garbage and trash,
   Sun City is the same way.
   Q Does that now vary from lot to lot, or do
   you average the lots out in arriving at this
   figure?
    A. No. Just like I said, the average lot
10
   will run -- now, in the City of Phoenix, and I ...
11
   think it is also true in Scottsdale, I don't
12 |
   believe you can build on a lot that is less than
   60 foot, a minimum of 60 foot in Scottsdale:
   See Approximately:
15
16
   Now, are you limited in your rates by the
17
   Corporation Commission?
18
   A Yes.
19
   And what formula do you use in applying
20
   the Corporation Commission's limitations to the
   trates which you charge for commercial service in
   Scottsdolov 2017
23
   A l'e hove a rate structure. I don't have it
   with me. Scottscale has a rate structure which is
    port of their contract.
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Q Mas this rate structure approved by the Corporation Commission? A Yes. O Do you have a set figure limitation on commercial collection in Maricopa County excuse me, within one of the areas set out that the Corporation Commission set out in Maricopa County regarding commercial collection A Repeat that question, would you? ્ર T ended up a little confused myself. Isn't it true that the Corporation Commission fixes a specific rate limitation for commercial; A Yes, they do. But, you might clarify that too. We could give once a week service. We can give twice a week service, four times a week, five or six desp. 🔑 We can give you six days service which will change your rates, depending on the volume you se out.

Caryour limitations from the Corporation Commission, however, is based on volume, isn't that correct:

A On, I wouldn't say it was, no.

hen you say volume, you are talking abou

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say a large amount like a store will have. 1 Say one store will accumulate one cubic yard a day, there the next store may accumulate fouryards a day, but your base rate is set for cubic yard, oven if a guy only has four cans. "It's still -5 set the same way? C Do you now charge the commercial accounts in the City of Scottsdale on the number of cubic yards you carry sway from each place of business? 9 g. A A Right. 10 Regardless of the number of times per week you collect from them? 12 Tt's up to the individual customer how n hy times he munts to be picked up a week the If you collected, hypothetically, two 14 cubic yords from one place of business on Friday, TELL WAR BURNEY THE RESERVE only once in wael, would that merchant pay you the 17 same it if you collected the same two cubic yards 18 over six days, Mondy through Saturdays. Mark Nouls he but the same: 20 21 A M. Answer would be no he wouldn't. Fe would pay you more, isn't that correct 23 sure he would. 24 Wo Now, prior to the time that you computed 25 rate scale for the City of Scottsdale

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which is contained in one of these computed
    contracts, did you or your company conduct an
   investigation or survey upon which you base the
   averages of which you speak?
    ... A Yes. We made a survey in Scottsdale, which
   I think, at the time the contract was signed there
   were 10,040 people in Scottsdale, in the Scottsdald
   City limits, which is an estimate, I think, of
   2300 homes, I believe that is how many were in
   the City, limits gt that time.
10
      . O At that time that you made --
11
         The first survey.
      s perticular contracts
   this particular contract?
   ... A. Right.
    O. Now, Mr. Redmin, if the population of
           deligophicary of the Figure of the
   the City of Scottsdale had been 50,000 at the time
17
   you made would survey, would the rates have been
18
19
      A If it had been 50,000
      You, Sir.
      IR. MINKE: If you know.
   A I Would say no.
      A On account of the length of haul that we
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have to go from Scottsdale to the land fill.

: 7 0

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O Now, in an earlier conversation between
   yourself and Mr. Williams, the Scottsdale City
   Manager, and Mr. Estes and miself, Mr. Estes made
    the statement that a vacancy factor had been to
    computed into the total number of residences in
 5
    the City of Scottsdale.
- 6
    In the process of computing a rate scale for
    Stottsdale today, can you explain to me the way
8
   that that was accomplished?
     . . A It's yery simple.
      -TMR. FRANK: You kind of moved from a
11
12 | conversation with Mr. Hotes ---
           BURTON: Bir Rodmin was present. 1989
        MR. TRANK: Could you disk him simply,
  want to talk about vacancies, would you ask him
  about the vacancy factor, and then --
    OCHR. BURTON: This is whit I want. I would
17
     2 " Take the same with a real contract of the same of
   like for you to explain what begring the vacancy
18
    Parallel Marie Vice
   factor, if any, how in the establishment of a rate
19
20
    A - You ask quite a bit. I have several
21
   rent 1s of my own.
      irote this contract, occupied and unoccu-
   pied, in which un unoccupied house has more
   refuse than one thit is occupied. You can believe
   that or not.
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ROBERT R. MILBURN & ASSOCIATES

2.4

Any time a house is vacant, if you keep that 2 | house rented -- I have two of mine, because my taxes are a little high, you go out and trim the hedge. You mow the lawn and leave all sorts of dobris back of the house or inside the house. haul that out.

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Bay the house is vacant for two weeks or thirty days. You mow the Tawn again. You water it. Then the people that move in usually have the moving van or moving van eartons and all that stuff. A You will haul more debric on the average We from an unoccupied house than you do from one that is occupied.

O Then, let's pursue this one step further First of all, do you recall any pracise number, percentage, that was applied to that rate scale as a vacancy factor.

. In other words, was it five percent, ten percent, fifteen percent?

A Mell, there was an estimate given by, see I believe, it was McCormick in Scottsdale where he said that he had several apartments, I guess, still there, you may know the man, I con!t, but I he said his run from two to six per cent unoccupied He has sever l'apartments.

But do you now recall what figure was used

1 | in this particular contract? A No, I don't. Now, after your explanation of the effect 4 of vacant residences, may we assume that you increased your cost of service by the violing factor or because of the vacancy factor you decreased its A Meither one. The other words, once again, hapotantically, . 9 10 | 11 there ware 10,000 residences, places of . 11 residence in the City of Scotteinle, and we could establish that tun per cent of these residences 12 wereaviount as alletimes, your total billing to 13 TARREST THE NORTH SECTION STORY th City of Acottodale Would Fot be, raduce ton per cont, in this correct? 15. July 110, it wouldn't be a single of the 16 The ANN. FRANK: Burgulalibe or would not bit 17 Fill the Conference Tyn tithogo: "outh net se. The universal-18 19 | sarvice we may decreased to wis one figure, and that FIREDI: Do vou recult, that it is Zates ic whit was asked for. 20 21 y - > 1 s is that the figure was computed on the basis of 22 Consideration and this was tulen into the consideration and the co 23 24 consider tion, and that the total cost figure was 25 reduced by that amount? A I remember Wr. Estes reposting what washing 26

made at the City of Phoenix at that meeting, you and Williams and they figured ten per cent vacancies in the City of Phoenix at the last meeting we had. It was in regards to Scottsdale. If you remember, Mr. Williams soid that he didn't know what the percentage of vacancies were. He said that in the particular house he moved into it was vacant for six or seven months previous to him occupying it. the 10 Now, switching back again to the provious 10 subject: / 11 Can you recall the length of time that you 12 negotiated with the City of Scottsdale and the att 13 citizens of Scottsdale-prior to the actual discussion of the actual contract we are talking 15 about! 16 The A Oh, I would sam approximately seven or 17 eight months. We had about four different 18 19 Contains this time were you meeting primarily with the Council or with the City 22 A, Well, we mot both. When Allison was 23 there, I mat with them three or four different times, and then after he was fired it was some 25 time before they had mnother manager.

Bob McNutt. I met with Jim Smith on several different occasions, and then on Council night we would go over and go before the Council on our proposal. C. Now, I apologize for jumping back and forth, but I would like to switch to another subject. Now, as to the other contracts with Arizona 8 municipalities, which you have mentioned, do you know of your own knowledge what the terms of these 10 agreements werek 11 12 that are the terms of those agreemen 13 the best of your recollection " " Feel MR. MIRKA: "Wouldn't the agreements speck for th muclves, Counsel? .16 Me'll have thom. We have already indicated 17 that they will be a part of the pre-trial. 1ê MR. BURTON: You would object, then, to his 19 answering that? 20 MR. HINE: Well, I think it is immiterial 21 The agreements themselves are the best evidence. 22 KR. BURTON: With reference to one 23 porticular agreement, what is your understanding 24 to the terms of the Glendale agreement? MR BURTON: Do you have any objections

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that? To the terms of the Glendale agreement?
       MR. MINNE: It's immaterial. We will object
3 | for that reason.
        A Glendale, if I'm not mistaken is a threg-
   year contract.
       o MR. BURTON: It is your understanding
. 6
   that there is a clause in that contract that the
   term of it is for three years, is that correct?
    A Right.
     . . . And is it your understanding under the
10
   Glendale contract that the Garbage Service Company
11
   is entitled to charge on the basis of all
12
   residential units in the City, occupied or
     O MR. MINCE Are will make the same objection,
16
   A Right : A Right
17
   Then, can you explain to me --
18
   MR. BURTON: The same objection will continue,
19
   I presume.
20
    O MP. BIRTON: -- why in the Glondale Try
21
    ground there is a provision in paragraph four A,
   aver; three months Garbage Service Company and the
    City of Glordala will conduct an actual count of
24
    occupica residential units?
25
     MR. MINNE Same objection on the grounds that
              CALL BOOK OF MERCHANISM STATES OF THE SECOND
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it is immaterial.
             O MR. BURTON: Can you answer that or not?
          If not --
                    A He said it was immaterial.
                        MR. MINNE: You can answer it.
                 Q MR. BURTON: He asked you to answer it.
                      A Repeat that question.
                      Q Can you explain to me why there is a
          provision in the Glendale contract that the City
           and the Company will conduct an actual count every
           three months of occupied residential units?
11
                 A That was put in the contract which was
12
          signed by the City of Glandale, and then, after
           signing the contract, Mr. Stan Van DePutte said
            they were -- we made one physical count. Then he
 15
            asked us after that to come to their Building
              THE PART AND A SECOND OF THE PARTY OF THE PA
 16
            Department and take it off that record where if
 17
             they had built a new home and put water and sewer
  18
              O When the original physical count was
  20
             conducted, was it of all daellings or only
21
  22 | occupied dwellings
                  作品の技術技術という。第一
                       A Occupied and unoccupied.
   23
              C. Can you tell me what the standard fee for
              residential units is in the City of Glendale?
    25
   26
```

C How much is that? MR. MINNE: May there be a continuing objection to this line of interrogation, so that we won't have to elutter up the records with a series of objections . -Go ahead and answor it. \_\_\_\_Q MR. BURTON: What is the rate per residential unit? - Λ \$1.95. T \$1.95. Er. Rodman, why is that lower than. 10 the City of Scottsdale? 📑 11 A Very simple. The City of Glendale agreed 12 to puy us before their land fill was opened \$2.50 13 persload; \$1.95 ware and we dump in their land fill free of charge, no charge to Carbage Service Company. 16 agreement that you only plek up trush every two 18 weeks. Does that have any bearing on the rate? 19 A Sure it does .... 20 Do you, in fact, pick up trash in Glendale 21 the same way you do in Scottsdule: A. No. Minne's objection. 24 Mr. Roaman, would you explain your operation in the City of Scottsdale particularly as to the number

trucks and number of personnel that are involved?" A I think we are operating now about eleven or twelve trucks in the City of Scottsdale. We have about thirty-six on garbage trucks and about . five or six on the land fill. of Mould you repeat that. I'm sorry, I didn't follow you. A We got about thirty-six on garbage trucks and five or six on the land fill. The Told see. Muring the course of your working 10 day in the City of Scottsdale, do any of the trucks 11 go outside of the City limits to collect garbage and or trish from the City of Phoenix, Tempe or Wiricops County? 14 A Do any of them Yes, Yes, sir. 16 A I would have to check a map of these. 17 I ddhie have a mup with me. P. soibling 18 19 C. Marbe I can rephrase my question. 20 Are those trucks; because of the nature of their routes, restricted to the City limits of 22 23 Beatted le, or do their routes extend beyond the limits of the Cit of Scottsdule in the normal 24 limit of their operations A I couldn't answer it unless I had a map

the majority of what we pick up, which 1 is stationed in Scottsdale, the land fill, are the trucks that work out of Scottsdule. I would say ninety-five or ninety-six percent. It may even be closer to a hundred percent. Without a map I couldn't tell you exactly. . Q Now, at the present time how many --7 commercial establishments is Gerbage Service Company serving in the City of Scottsdale? A I couldn't answer that. I'e just finished 10 a survey. 11 Of Can you approximate it for may Oh, I think Eddie's better qualified Mr. O'Brien could\_nsuer that ou stion Do you know approximatel, or what the dvorage to or the plaking that are mide at commercial establishments, or does that vary, that would be --20 A lie had a count awhile ago. I forget wha 21 the amount wis. I believe sixty or sixty-five, I'm not mictalon. We have added several to that 23 since that 24 Individual commercial accounts? A Individual commercial accounts

customers?

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A I don't know whether they are potential. We contact all the customers we can possibly get.

Q You have a constant sales program all of the time?

A If we don't, the boos would fire us.

Q And this includes, in fact, is limited to commercial establishments now that you have all the residential business in Scottsdale?

A It would have to be. On the universal service, they are the only ones left.

Q Now, is it the company's desire, since you mile more money this way, to have as many pickups to per week at commercial establishments as you can?

That is not a very good question, but a man doosn't ask for a pickup unless he needs it.

In other words, if he has got a place in his stord, In the blok of his store, if he has got A pluce to store caraboard or boxes, whatever he has got, he don't go to the trouble of taking those out ever, day if twice a week will render the service to him. He'll put it out twice instead of

Service to nim. He'll put it out twice in six times.

O Who represents Garbage Service in Scottsaile for this purpose?

A The names of individuals

22 1.5.

23 24

```
A Jack Berger.
        C How do you spell the last name?
       A B-3-r-E-0-r. Eddie O'Brion.
   B-u-r-r-s-l-l.
       C Now, to your knowledge, Mr. Redman, do
   any of these individuals approach commercial.
- 6
    customers with the argument that their number of
   pickups should be increased and that it wouldn't
    cost them, individually, any more to have them
9
    inorewsed?
10
     . No.
     But in the event that they are increased
   for ungareuson, does the bill to the City of
    Scottsdale increase as a
       Repeat time quoction, will you plouse
    organia I think I -- I think it's cirp. I think
16
    you alread; knowered 15.13.
17
      A I thought I did.
    1 10 / The tis the average age of the Touisment
 ./ :
 19
    now being used in the City of Scottsdale
    A We have got four !61's. There are two
 20
     161 GMC's. Two 161 Internationals. Four 160
 22
     Fords. I balleve there is -- wa tre using the
 23
     approximately either four or five 155 GMC sat
 24
      the wrds, and there are a couple of spares that
 25
     volume, set up in case one of the others break
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down.
       ୍ଦ Does this equipment stay in the Scottsdale
   area or is it rotated with the other equipment in
   the Valley? ...
    A It stays in Scottsdale.
     . Q Has your Company run any survey to deter-
   mine the average cost of operating that equipment?
       A I would hope so.
        Q And are you acquainted with such cost
   figures? _
10
        A On operating equipment?
       Ç∞ Yes.∵
   A It costs us about -
   MR. MINNE: For the purpose of the record;
   will object to this on the grounds that it is
16
   immaterial.
     Go shead and answer the question.
   A About eleven cents a mile.
18
       or MR. BURTON: This is for the equipment
   alone or are you talking --
    A You asked for equipment. That is what I
21
   gave you.
   Fine. Fine.
   Now, can you tell me what wages you pay to
   your supervisors in the Scottsdale area?
        A I think it's $525 a month. I believe
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Garbage Service Company has executed with the
   Tribul Council for the land presently being used
   for land fill purposes by Garbage Service in
   connection with its contract with the City of
   Scottsdale?
        A I made it.
        Q. How much are you paying for it?
       MR. MINNE: Same objection.
       MR. FRANK: I take it we have a stipulation
   as to a continuing objection and there is no need
   to objact?
11
        MR. BURTON: That is sutisfactory.
12
    objection to that.
        MR. MINE: Now, you may enswer the question.
     A Me pay one year in devence which is $25,000,
    and I think it's $200 mmonth after that.
16
         o Tagreer in advance, but you are powing
17
    $200 a month for that land? ...
18
     A Yes. We had to The Towernment asked for
19
    the $2400 to be put up.
 20
           Now, you stated this before, but just for
 21
     review. How many people do you have working out
 22
     there, five?
            Mell, I think there is about five. See,
     we have two fills, and one water truck does both
     of them. - Part of the time we have two CAT
```

operators, and part of the time just one, and then you have a spotter. We have a -- I think it's two or three night watchmen around the clock. " Q How much do you pay each of these individuals? How much do you pay your CAT operator plus his allowance for uniforms and a two-week vacation per year. O How about your spotters? A I believe the spotters draw \$2.50. That is 10 also under the Union. n Your watchmen? A The watchman is based on \$1.25 an hour. 13 The man who operates your water truck? A He makes \$525 or \$580 a month. In feet, there are two water trucks that would be there at 16 all times. 17 Q You mentioned two fills operating and I 18 wonder if they are both used for Scottsdale? 19 A No. 20 Q Who is the other one for? A The City of Phoenix and Garbage Service Company. 22 23 C Are both on the same parcel of property? A No. 44 F. C. 1944 ... O In other words, when you made the stateme

AND THE STATE OF THE PROPERTY OF MILEN & ASSOCIATES

earlier that you were paying \$200 a month to the Government on this Indian land, this referred only to the City of Scottsdale? A Right. We own the other property. Q I see. A Eighty acres O I see. Now, is the Scottsdale land fill used only for the purpose of dumping Scottsdale's 8 refuse and serving the citizens of Scottsdale as provided by the contract? 10 A Primerily. I would say ninety-six percent. 11 Q What is the other four percent? 12 A Yell, on your commercials, this still comes 13 out of Scottsdale. Still comes out of the Scottod is City limit. See Even those customers that you charge for 16 disposing of their refuse, the conclusion is that a 5 15314 to the at more than ninety-five parcent 19 coming out of the City of Scottsdale? 1. Oh, sure. In fact, right now we are getting twenty-five or thirty cors a day, that is, .... station warons and passenger cars, that we don't 22 charge anothing. Those are out of Scottsdale. C. How for is the land fill from the center. of Scottsdale 25. The center of Scottsdale?

ROBERT R. MILBURN & ASSOCIATES

Q Yes, sir. A I would say it's about five and a half miles. Q But less than three miles from the outer boundary of Scottsdale? A. I checked it not too long ago. Just a fraction -- from the City limits of Scottsdale two and five-tenths I believe it was. Q Mr. Redman, what profit did Garbage Service Company realize last year in its contract with the City of Scottsdale. 11: MR. FRANK: Objection. At this time, may we go off the record for a momenty 13 (Whereupon, a brief discussion was had off 14 the record.) MR. FRANK: The record will note an % 16 objection to this question. 17 Q MR. BURTON: What is your answer, then, 18 Mr. Redman? 19 . A I don't know. 20 Who handles the books of the company, Mr. Redman? A Al King is company comptroller. O Does he do all of it for Gurbage Service The second of Company or does he have it directly under his

BORERT DIMINISTRA ASSOCIATES NEW PORENT DIMINISTRA ASSOCIATES NEW PROPERTY

Γ	A It's between him and	Ferg. Ferg 1s his
	office manager.	
	o Would you give me the	full name of Fera?
1	A Fers Spowart. Someth	ing like that.
	o What do you make, Mr.	Redman? How much
	money do you make per year fr	com Garbage Service: 17
	MR. MINNE: It is immute	orial, and I wall
	instruct him not to enswer.	cumthan questions.
:,	MR. BURTON: I have no MR. MINNE: We have no	
	/	lock p. m. this
	baptiling openinged	
	2 deposition was sometame.	
	1 2/5	F/111
	5 L. E. Roomen	7a. 7
****	6	
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	16	
	19	
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	21	
	22 23   111   10   11   12   13   13   13   13   13   13	
	24	
	25	
	26	
	ROBERT R. MILBURN 8	ASSOCIATES

STATE OF ARIZONA COUNTY OF MARICOPA BE IT KNOWN that I took the foregoing deposition pursuant to stipulation; that I was then and there a Notary Public in and for the County of Maricopa, State of Arizona, and by virtue thereof 8 authorized to administer an oath; that the witness 9 before testifying was duly sworn by me to testify 10 to the whole truth and nothing but the truth; that 11 said deposition was reduced to writing under my 12 direction, and the foregoing thirty-four typewritten pages constitute a full, true and accura 14 transcript of the testimony of said Witness, the best of my skill and ability 16 FITHERS my hand and seal of office this 17 day of September, 1962. 18 19 20 My commission expires 25

## AFFIDAVIT

STATE OF	ARIZONA	)
		) \$5.
Maricopa	County	)

Bud Deal, being duly sworn, states as follows:

- 1. I am currently employed by the City of Scottsdale ("City") Department of Sanitation as a commercial driver.
- 2. I have worked for the City since approximately 1963. Prior to that, I worked for Garbage Service Company ("GSC"), also as a driver, for approximately twenty years.
- 3. My position has given me the opportunity to observe and participate in the collection and disposal of the City's municipal waste since approximately 1953. Therefore, I have knowledge of how the waste is collected and the location to which it is taken for disposal.
- 4. It is my recollection that GSC collected the City's municipal waste from approximately 1953 to 1963. GSC also operated the landfill to which all of the City's municipal waste was taken, until approximately 1963. In 1963, the City began the process of taking over the administration of its waste collection and disposal.
- 5. Since GSC began serving the City, all of the City's municipal waste, with the exception of hazardous materials, has always been transported to a landfill on the Salt River Pima Maricopa Indian Reservation located near Country Club Drive and McDowell Road. From 1953 to 1963, this landfill was operated by GSC. Sometime after 1963, the Salt River-Maricopa Indians took over operation of the landfill.
- 6. To the best of my knowledge, the City's municipal waste has never been transported to any other landfill site, with one exception. One night, many years ago, garbage trucks were unloaded at a recycling plant in Tempe, near First Street and Hayden Roads. Because I was driving that night, I have personal knowledge of this occurrence. However, I cannot pinpoint the date except to say that it was long ago.
- 7. It is my understanding that the City does not allow the disposal of hazardous materials in the municipal waste system. Businesses generating hazardous materials are required to arrange for disposal of such materials on their own.

Bud Deal

On this 29th day of Mark, 1992, before me, the undersigned Notary Public, personally appeared Bud Deal, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Could Line Elect
Notary Public of

My Commission Expires:

guly 31,1994

## AFFIDAVIT

STATE OF	ARIZONA	)
_		) ss
Maricopa	County	)

Claude Crosier, being duly sworn, states as follows:

- 1. I worked for the City of Scottsdale ("City") Department of Sanitation from 1964 until 1983 when I retired. I was a supervisor from 1964 through 1974 and was the Superintendent responsible for the City's refuse operations from 1974 through 1983.
- 2. My position with the City gave me the opportunity to observe and participate in the collection and disposal of the City's municipal waste from 1964 until 1983. Therefore, I have knowledge of how the waste was collected, and the location to which it was taken for disposal, during that time period.
- 3. Prior to 1964, Garbage Service Company ("GSC") had a franchise to collect the City's municipal waste. In 1964 the City took over garbage collection.
- 4. At least from 1964 until 1983, the vast majority of the City's municipal waste, with the exception of hazardous materials, was always transported to landfills on the Salt River Pima Maricopa Indian Reservation. At first, the landfill was located south of McDowell Road at Country Club Road. At some point, probably in the middle or late 1960s, another landfill was opened on the Reservation just north of McDowell Road and east of Beeline Highway. As far as I know, the City has never operated or owned either of the landfills on the Reservation.
- 5. Very occasionally, garbage was taken to other locations. During the late 1970s or early 1980s the City made informal arrangements with Maricopa County and began hauling a small amount of garbage to a county landfill near South Carefree Highway and 58th Street. This was done because of the growth in the northern part of the City. Once the City began using the County landfill, one or two trucks would be taken there two or three times per week. Each truck had an official capacity of 31 or 32 cubic yards, although in actuality each truck only held about 20 or 25 cubic yards. Nearly all the waste which went to this landfill was residential.
  - 6. I recall that on one occasion, when the Salt River was flooded and trucks could not get to the regular Reservation landfill, residential waste was taken to the Ray Edwards recycling landfill located in Tempe east of Hayden Road and south of the Salt River bed. This probably occurred sometime between 1979 and 1981. I assume that the garbage was sorted at the

recycling landfill, and that anything the recycling plant did not want went to the Reservation; however, I do not know this for sure. There was no formal agreement between the City and Edwards.

- 7. To the best of my knowledge, the City never owned, leased, or operated any landfill between 1964 and 1983.
- 8. To the best of my knowledge, the City never took waste to any landfill or any other site between 1964 and 1983 other than those mentioned in this affidavit.
- 9. During the time I worked for the City, it was the City's policy not to pick up hazardous materials. Disposal of such materials was the individual's responsibility.

Claude Crosier

On this /8th day of wee, 1992, before me, the undersigned Notary Public, personally appeared Claude Crosier, known to me to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same for the purposes therein contained.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal.

Francis Osla
Notary Public

My Commission Expires:

11-27-92

FRANCES I. SOTO
Notary Public - State of Arizona
MARICOPA COUNTY
My Comm. Expires Nov. 27, 1995

, 1	CITY of SCOTTSDALE, ARIZONA REQUEST FOR COUNCIL ACTION	3
JEST FOR ORDINANCES AND RESOLUTIONS M	JUST BE IN THE CITY MANAGER'S OFFICE BY 5:00 P.M. OF THE TUESDAY PRECEDING FOR SER'S OFFICE BY NOON THURSDAY,	
CITY MANAGER:	3. THE FOLLOWING COUNCIL ACTION IS REQUESTED	DATE: 1-21-66
ROM: Public Works DEPARTMENT OR DIVISION	ORDINANCE RESOLUTION X FORMAL MEETING	REQUEST NO. 3 & 7

XPLANATION OF REQUEST:

Consider a joint program of refuse disposal with the City of Mesa for the development of a landfill site by the Tribal Council. The staff has held many meetings with representatives of Mesa and the Council and has worked out a proposal which will provide landfill services for a five year period. Under the terms of the agreement the two cities would pay all the costs of operation and would guarantee the Tribe a reasonable income. The agreement places controls on expenditures by the Tribe and provides for an advance deposit which will permit the Tribe to make payments during the first month of operation and which will be approximately \$3700. Initially, we expect operation of the landfill will cost about the same as our present payments to the contractor. Over a period of years, however, the costs will decrease considerably. If the arrangement works out well, the Tribe will be in a position to offer landfill services over an extended period of time.

We have prepared specifications for a full service lease on a new Cat. DA. The agreement provides that the City will accumulate equity in the Cat and at the end of 5 years will be reimbursed at least in an extimated amount of \$10.000.

EMER, CLAUSE	6. DESIRED EFFECTIVE	7. A. SOURCE OF FUNDS	22	B. ACCOUNT NUMBER	C. AMOUNT	
] YES   NO	DATE:	NAME:			\$	
REQUESTED BY:	(4)	-	-ve-apilet	9. APPROVED BY:	18	
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GNATURE:	3			SIGNATURE USE 10	A	
), ACCOUNT NUM	BERS AND APPROPRIATION	N BALANCES CHECKED:	DATE:_	1/55/66 11. APPROVE	D ATO AVAILABILITY OF FUI	4D2
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Bu	BERS AND APPROPRIATION	and fresumed.	ВҮ:		FINANCE DIRECTOR	
2. APPROVED:	/	13, COUNCIL ACTION TAXEN	A, DATE	2-1-6 6 B. ORDINANO	E NO	
Yū	e	C. RESOLUTION N	10		ست پيدون	REJECTED
	CITY MANAGER	REMARKS:				

Minutes of February 1, 1966

The regular meeting of the Scottsdale Mayor and Council was called to order by Mayor Bud Tims at 8:00 P.M. Tuesday, February 1, 1966 in the Council Chambers.

Roll Call:

Present: Mayor Bud Tims

Councilmen Richard Auxier

Leonard Johnson Herb Caywood Joseph Meier Ken Murray John Senini

City Manager Wm. Donaldson City Attorney Richard Filler City Clerk Fern Anderson

The invocation was given by Rev. Herbert Landes of the Valley Presbyterian Church.

The minutes of January 18, 1966 were approved on motion of Herb Caywood, second by Richard Auxier, passed by unanimous vote.

Upon the recommendation of the Finance Committee, Claims 8578-8690 were approved on motion of Herb Caywood, second by Leonard Johnson, passed by unanimous vote.

Bid 180--batteries for City vehicles--was awarded to the low and best bidder, Blakely Ofl Co., on motion of Richard Auxier, second by Herb Caywood, passed by unanimous vote,

Bid Call 183--refrigeration and heating preventive maintenance for one year--was authorized on motion of Joseph Meier, second by Richard Auxier, passed by unanimous vote.

The <u>liquor license</u> transfer person to person of <u>Leo C Bertch</u>, B & B Caterers, Papago Lanes Restaurant, #6, was recommended for approval on motion of John Senini, second by Joseph Meier, passed unanimously.

The original <u>liquor license</u> request of <u>Clarence Baldwin</u> was deferred until February 15th.

45-Z-65--3106 N 70th Street--was continued until February 15th on motion of John Senini, second by Joseph Meier, passed unanimously.

46-Z-65--Main and 2nd St, behind OLPH--R1-7 to R-5--was a Commission Initiative application recommended for approval by a rajority vote. The application was introduced by Planning Director George Fretz, who stated that the proposed zoning would be the same as that on the north and south and the staff had concurred with the basic zoning as it was a part of an overall land use plan in this area. Herb Caywood moved that the staff be instructed to prepare a map and ordinance of the

property described in 46-Z-65 to change the zoning to R-5 as recommended by the Planning Commission and staff, second by Joseph Meier, passed by unanimous vote.

19-SP-65-6917 E Thomas, insurance office. The Planning Commission recommended the site plan for approval with the following stipulations that the back yard be blacktopped for parking; that a storage room be removed for access to the back yard; that the parking arrangement in the rear yard and the paving in the alley shall be as determined by the PWD; that the front yard shall not be paved, but remain land-scaped; and that the basic residential character of the front of the building shall be maintained as such at this time. The applicant was willing to concur with the stipulations of the Commission and said that he planned to begin the improvements as soon as the property was through escrow, about the first of April. John Senini moved that 19-SP-65 be approved subject to the conditions as outlined, second by Joseph Meier, passed by unanimous vote.

20-SP-65--N of McDowell, approximately 220 W of 76th St--new car sales -- was recommended for approval by the Commission with the following stipulations: that street lights shall be installed to City specs that the alley be dedicated and improved to City specs and, if the alley between this development and 76th St. is to be used as access, it shall be graded and oiled; that McDowell shall be dedicated and improved to City specs; that the lighting plan be so arranged that it will not shine on adjacent residential property, the plan to be approv ed by the City Engineer; the planter, lighting, and parking pavement proposed for the r/w be removed at owner's expense if r/w was needed for future widening; that the north wall be extended east approx. 23! to help provide a noise barrier between the service area and the residential area to the north; that a 6' masonry wall be required between the parking area and the alley on the north boundary and that the site plan shall be void if a building permit has not been issued in six months.

Mr. Fretz displayed the site plan of the property which had a 150' frontage on McDowell and 163' depth. The applicant said that the stipulations of the Commission were acceptable. The Council discusses the need for an access road in front of the property similar to that of Madison Chevrolet at Scottsdale and McDowell, as this would facilitate the parking of cars in front as well as make it safer to leave the high speed lane on McDowell. The architect was not in agreement with this thought as the investment in the landscaping and the extra parking would be lost when it became necessary to widen the street. Marc Stragier, PWD, said that the access road would give an advantage in traffic as a driver would prefer to enter the driveway and find a parking place from it rather than park on McDowell and enter a narrow driveway blocked by cars. Providing such a road would not mean that the building would have to be moved but that cars would not be parked on the r/w.

Mr. Auxier felt that a minimum of investment should be asked of a property owner of what was put in the r/w as it would have to be pulled out eventually. He was willing to issue the site plan as recommended by the Commission. Mr. Murray was of the opinion that the Council had a moral obligation for the safety of those on McDowell, which was the reason Mr. Senini had suggested the access road.

Mr. Senini moved that 20-SP-65 be approved as recommended by the Planning Commission and subject to an access road being constructed on the existing property line, the final decision to be subject to the approval of the Planning Director; the architect said that the access road had a certain merit but it was offset by the fact that the road would bring cars immediately in front of the covered sales area and the additional curb would add considerably to the expense of the project; second by Ken Murray; a canvass of the vote showed Mayor Tims, Councilmen Johnson, Caywood, Murray and Senini voted 'aye'; Auxier and Meier 'nay'; the motion passed by a majority vote.

13-UP-65--Rose Lane W of Granite Reef, Girls' Club--was recommended for approval by the Commission with the following stipulations: that an 8' alley be dedicated and improved to City specs on the north and east boundary; that street lights, as determined necessary by the City Engineer, be installed; that the lighting on the site for the recreation and play area be so arranged that it won't shine on future residential areas to the north and east and be approved by the City Engineer; and that a time limit of 9 months be set for the issuance of a building permit. Mrs. George Hill, Board of Directors, agreed to the stipulations of the Planning Commission, and that construction was expected to start in the next two-three months. Joseph Meier moved that the Use Permit be approved as recommended by the Planning Commission, second by Leonard Johnson, passed by unanimous vote.

Amendments to Ord. 147, as amended: Article XIXE, P-3 District, Sec. 1901E and 1902E; and to Article II, Sec 201, item 36a, were approved and ORDINANCE NO. 287 was read in full by Attorney Filler; read the second time by number and title only on motion of Herb Caywood, second by Richard Auxier, passed by unanimous vote; Ord. 287 was adopted on motion of Herb Caywood, second by Richard Auxier, passed unanimously.

RESOLUTION NO. 436, adopting a criteria for area identification signs, was read in full by Attorney Filler; adopted on motion of Richard Auxier, second by Herb Caywood, passed by unanimous vote.

The Mayor and City Clerk were authorized to enter into an agreement with the W Main St Merchants' Association for the purpose of erecting an identification sign on the NW corner of Main and Scottsdale on motion of Herb Caywood, second by Richard Auxier, passed unanimously.

As a second

The Mayor and City Clerk were authorized to enter into an agreement with the <u>Salt River Indian Council</u> and Mesa for a joint program of refuse disposal on motion of Joseph Meier, second by Richard Auxier, passed by unanimous vote.

The Heard Museum was authorized to hang banners at Main and Scottsdale between March 19th and April 3rd on motion of Joseph Meter, second by Leonard Johnson, passed by unanimous vote.

An encroachment of 3'6" over the sidewalk at 424 Craftsman Court was authorized as recommended by the City Manager on motion of Herb Caywood, second by Leonard Johnson, passed by unanimous vote.

Following a discussion concerning the impending legislative bill which would allow cities to create street lighting improvement districts, a safety <u>light</u> at <u>Angus Drive</u> and Scottsdale Road was approved and the requested lights on Shoeman Lane and Western Park Drive were continued on motion of John Senini, second by Joseph Meier, passed unanimously.

A list of the paid and unpaid assessments on Imp. Dist. S-6107 was presented to the Council, then filed. RESOLUTION No. 428, ordering the bonds for S-6107, was read in full by Attorney George Song; read the second time by number and title only on motion of Herb Caywood, second by Dr. Tims, passed by unanimous vote; Res. 428 was adopted on motion of Dr. Tims, second by Richard Auxier, passed unanimously.

A list of the paid and unpaid assessments on Imp. Dist. S-6109 was presented to the Council, then filed. RESOLUTION NO. 429, ordering the bonds for S-6109, was read in full by Attorney George Song; read the second time by number and title only on motion of Dr. Tims, second by Joseph Meier, passed by unanimous vote; Res. 429 was adopted on motion of Herb Caywood, second by Leonard Johnson, passed by unanimous vote.

The plans and specs, and engineering estimates of Imp. Dist. S-6607, Tonto, were approved on motion of John Senini, second by Joseph Meier, passed by unanimous vote. RESOLUTION NO. 430, of intent, was read in full by Attorney Song; read the second time by number and title only on motion of Richard Auxier, second by Ken Murray, passed unanimously; Res. 430 was adopted on motion of Ken Murray, second by Richard Auxier passed by unanimous vote.

The plans, specs and engineering estimates of Imp. Dist. S-6409, Butler were approved on motion of Ken Murray, second by Leonard Johnson, passed by unanimous vote. RESOLUTION NO. 431, of intent, was read in full by Attorney Song; read the second time by number and title only on motion of Ken Murray, second by Richard Auxier, passed unanimously; Res. 431 was adopted on motion of Ken Murray, second by Richard Auxier, passed by unanimous vote.

#### LANDFILL AGREEMENT

WHEREAS, the Salt River Pima-Maricopa Indian Community,
hereinafter referred to as the Tribe, wishes to operate a sanitary
landfill as a commercial enterprise; and

WHEREAS, the cities of Scottsdale and Mesa, hereinafter referred to as the CITIES, are desirous of disposing of all wastes collected by their Sanitation Departments and private firms and individuals within their City limits.

NOW, THEREFORE, in consideration of the premises, the parties hereto agree as follows:

- . 1. The Tribe shall furnish a suitable site located adjacent to the Salt River within a reasonable distance of North Country Club north of Mesa but not to exceed 2 miles from the intersection of McDowell and North Country Club Drive.
- 2. The Tribe shall furnish labor and equipment and sufficient supervision to operate a sanitary landfill.
- 3. The landfill shall accept all wastes provided that they do not present undue health hazards to operating personnel or constitute a nuisance to the general public when being disposed of in this manner. Explosive, highly radio-active, highly toxic materials, car bodies, large trees or tree stumps, or other material not ordinarily disposed of in a sanitary fill operation will not be accepted.
- 4. The landfill shall be open and attended Monday through Saturday during the hours of 7:30 A.M. to 5:30 P.M. City drivers shall have access to the landfill for occasional after-hours dumping. Access before or after the hours specified shall be by

special key provided by the City of Mesa or Scottsdale. The landfill shall be operated according to latest standards and criteria of the U.S. Public Health Service and of State of Arizona and Maricopa County Health Departments.

5. City residents and reservation residents hauling refuse from their homes in private vehicles no larger than a pickup truck ( ton capacity) may make use of the landfill at no charge by presenting an authorized pass card to the gate attendant identifying such operator of the vehicle as a resident of the City of Scottsdale, Mesa or the Reservation, the pass card to show the vehicle license number; said pass card to be issued by the Cities or the Tribe per annum. Material hauled by bearers of such cards shall be added to the volume contributed by the two Cities and the cost prorated as provided below. For each pass card issed by the Tribe, 25¢ collected shall be included in gate receipts for that month's billing. All other haulers, not a party to this agreement, shall be charged for dumping at the rate of not less than \$.50 per cubic yard with a minimum charge of \$1.00. The Tribe shall have the right to limit the number of such other haulers; however, such right of limitation shall not be exercised in an unreasonable manner. The Cities agree to be responsible for supplying an accurate record of material dumped before or after regular working hours and to pay for same as per agreement. It is being further understood and agreed that if the before and after hours dumping must be supervised or requires the use of additional labor by the Tribe, then in that event the Cities agree that an adjustment shall be made in Paragraph 8 so as to provide for compensation for overtime pay.

- 6. The gate attendant shall tally all City loads by truck or license number as well as pass cards issued by the Cities or the Tribe. Each truck shall have a nominal capacity in cubic yards. In this manner the total volume contributed by each City can be recorded. The attendant shall make estimates on partial loads, and his estimate and figure shall be binding as to the amount due for partial loads.
- 7. The Cities shall pay rental to the Tribe for the use of the landfill based upon the cost of operating it, plus a rate per cubic yard contributed for land rental, which shall be \$.05 per cubic yard delivered, measured in the truck until March 1, 1971. After that time, the rental rate shall be \$.075/C.Y., less all gate receipts from other contributors and any salvage revenues. The rental charges shall be computed monthly as follows:

LINE	<u>LINE</u> ;	AMOUNT
1	Direct Labor Costs	xx.xx
2	Equipment Operating & Maintenance Costs	XXX.XXX
3	Equipment Monthly Payments	XX.XXX
4	Administrative Cost (10% of Line 1)	XXX.XXX
5	Contingencies and Miscellaneous Items	XXX,XXX
6	Total Capital & Operating Costs (Total lines 1-5	XXX.XXX
7	Fee (10% of Line 6)	XX.XX
8	Land Rental, Rate/C.Y. Refuse from all sources	XX,XXX
9	Total Cost (Total Lines 6, 7, 8)	XX.XXX
10	Less Gate Receipts From Others & Salvage Revenue	XX,XXX
11	Total Rental Charge to Cities	

The Cities guarantees a total minimum monthly payment to the the Tribe of \$6650 less all gate receipts and salvage revenue as hereinabove set forth; i.e., the above formula shall only be effective when Line 9 exceeds \$6650. In the event that the Tribe uses the landfill equipment for purposes other than operating the landfill, Line 9, total cost including the \$6650 guaranteed minimum charge, shall be credited at an hourly rental rate not less than

the current Associated Equipment Distributors rate for comparable equipment. The total monthly rental charge shall be prorated to the Cities in proportion to their respective volumes contributed during the month. However, if during any month or months while this agreement is in effect, either City shall haul any material to another site, such City shall pay not less than 40% of the total rental charge or its proportionate share, whichever is greater. If neither City hauls any material to the site furnished by the Tribe, then each City shall pay one-half of the minimum monthly payment. Each City shall pay its monthly rental 30 days after receiving the statement except the first monthly payment shall be in advance. The number of operating personnel and their respective hours shall be as follows:

The number of employees and equipment required has been predicted upon handling a maximum of 40,000 compressed cubic yards per month. In the event of any amount exceeding this figure then the number of employees and equipment required shall be adjusted accordingly.

NUMBER	CLASSIFICATION	HRS. PE	R WEEK
		980	(8 (8)
2	Equipment Operator, full-time	40 40	
3	Landfill Attendant, full-time	40	
1	Supervisor, part-time	0	

A landfill attendant may also act as relief man as Equipment Operator when necessary. Salaries paid shall not exceed those paid by Scottsdale or Mesa, whichever is higher, for similar personnel classifications.

9. The Tribe agrees that the records which form the basis for financial obligations hereunder shall be made available for inspection at reasonable times, not more frequently than once a month, by any properly constituted official or agent of all

parties to this agreement.

- 10. This agreement shall be effective for a period of five (5) years, unless terminated sooner by mutual agreement of all parties hereto.
- 11. In the event of failure by the Tribe to operate the landfill in a manner satisfactory to the State of Arizona and Maricopa County Health Departments either City may take over and operate the landfill, assuming the assets and liabilities and the existing formula for computing rental charges hereinabove set forth, to be paid to the City operating the landfill, except that the land rental of \$.05/C.Y. shall be paid to the Tribe until the first day of March, 1971 and after that date \$.075/C.Y.
- 12. The parties hereto, by mutual agreement, shall have the right to admit additional parties. Said parties shall be subject to all provisions of this agreement and such other terms and conditions as mutually agreed upon.
- 13. With regard to dumping by the City's operated refuse collection units the Citles agree to dump at such reasonable locations on the landfill as the Tribe, and its supervisor may direct.
- 14. Each party shall be responsible for its own negligence and liabilities and for the acts or omissions of its employees or agents.
- 15. The value of the equipment, which will have been paid for by the Cities of Scottsdale and Mesa, shall be prorated to the two Cities in proportion to their share of the price paid during the term of the agreement. Such value shall be limited to the value of the Buy Back price of the successful bidder for the machine. Should the Tribe sell the equipment for more than the

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said price, it shall retain the difference.

16. A committee to arbitrate problems which may arise in the administration of this agreement shall consist of the Public Works Director of each City, one person designated by the Tribe, and by the Secretary of Interior or his authorized representative. In the event that an agreement cannot be reached by the four persons listed above, then, and in that event, they shall appoint a fifth person and any arbitration matter shall be decided by majority vote including said fifth member as a voting member.

IN WITNESS WHEREOF this agreement is made jointly for and on behalf of the Cities of Scottsdale and Mesa, both municipal corporations of the State of Arizona, by their respective Mayors and attested by their Clerks; and this agreement is made for and on behalf of the Salt River Pima-Maricopa Indian Community, by its Council Chairman and the authorized representative of the Secretary of Interior, on the <u>lst</u> day of <u>Yanuary</u>, 19 71.

CITY OF SCOTTSDALE

BY Sund MAYOR.

1 / 1

CITY CLERK

ATTEST:

ATTEST:

CITY CLERK

SECRETARY OF INTERIOR:

BY V Hanline

CITY OF MESA

BY MANAGER

SALT RIVER PIMA-MARICOPA INDIAN

COMMUNITY

Letter from the Scottsdale Chamber of Commerce inviting the Council to meet with them and discuss Town problems was presented and discussed.

No further business to come before the meeting, the meeting was adjourned at 12:45 o'clock P. M., upon motion of Moya Kelley, second by Austin Smith, passed by unanimous vote.

Respectfully submitted,

Dorothy A. Ketchum, Clerk

\* \* \* \* \* \* \* \* \* \* \*

August 23, 1960

A special meeting of the Mayor and the Council of the Town of Scottsdale was called to order by Mayor M. E. Kimsey, Tuesday, August 23, 1960, at 8:00 o'clock P. M., in the Town Hall.

#### Roll Call:

Present:

Mayor M. E. Kimsey
Councilwoman Moya Kelley
Councilmen John Knudsen
John Marron
Manager Gordon Allison
Attorney George Song
Clerk Dorothy Ketchum

William Schrader
Austin Smith

Absent:

Councilman John Pickrell

Fred Stresen-Reuter and property owners in the area north of Indian School Road and west of Scottsdale Road present at the meeting informed that the majority of the property owners in that area had been contacted and were interested in forming an improvement district in order to pave the streets in that area. Bob Humphrey of "Knight Engineers" informed there would be no drainage problem in the area. It was decided to have the Town Engineer figure a method of assessing and a cost estimate to present to the property owners and to petition the property owners in the area for the improvements.

Requiring parallel parking only, in the first block on East Main Street was defered until further investigated upon motion of John Marron, second by Austin Smith, passed by unanimous vote.

Public Service's plan and agreement for the lighting of the Community Center was presented and reviewed. Plan consisted of 32 lights in the area, installed, maintained and electricty paid by Public Service at an approximate cost of \$145.00 per month. Councilman John Knudsen to investigate the type of lighting to see if it is the most practical for this purpose before further action is taken.

Harold Jackson and Lester Matlock were appointed as member of the Board of Adjustments upon motion of John Marron, second by Austin Smith, passed by unanimous vote.

Mildred Bratzel, Colonel Myrick, Lute Wasbotten, Don Womack and James Baum were appointed as Street Paving and Drainage Committee members upon motion of John Knudsen, second by Austin Smith, passed by unanimous vote.

A petition was presented requesting that the Town of Scottsdale annex a triangle of property north of Indian School Road and south of the Canal at Monte Vista.

After examining the petition and being of the opinion that the same was in due form and represented over fifty (50%) of the required assessed valuation in the area represented by the petition and that such area was contiguous to the Town of Scottsdale; ORDINANCE NO. 90, AN ORDINANCE ANNEXING TERRITORY CONTIGUOUS TO AND NOT ALREADY INCLUDED WITHIN THE CORPORATE LIMITS OF THE TOWN OF SCOTTSDALE, AND DECLARING AN EMERGENCY was presented and read in full by Attorney George Song. Upon motion of Austin Smith, second by Moya Kelley, passed by unanimous vote ORDINANCE NO. 90 was read for the second and third time by title only, thereupon motion was made by Moya Kelley, second by John Marron, passed by unanimous vote to adopt ORDINANCE NO. 90.

The Town Manager reported:

That the property owners of the northwest corner of McDowell and Scottsdale Roads (40 acre tract) wanted to have the property annexed into the Town of Scottsdale providing the property would be zoned commercial.

That Maricopa County is going to start the engineering for the improvements on Indian School Road this fiscal year and would start construction in the 1961-62 fiscal year, therefor the same planning should be started for Indian School Road paving within the Town limits.

That according to Mr. Bigelstone of the Fire Rating Bureau the Town would have an eight (8) and nine (9) fire rating.

That more fire plugs were needed and he was investigating the possibilities of requiring subdividers to install fire plugs in new subdivisions and establishing improvement districts for installation of fire plugs.

Mayor M. E. Kimsey was authorized to execute an agreement for the leasing of a sanitary land fill at River Drive and Perry Lane upon motion of William Schrader, second by Moya Kelley, passed by unanimous vote.

No further business to come before the meeting, the meeting was adjourned at 10:40 o'clock P. M., upon motion of John Marron, second by John Knudsen, passed by unanimous vote.

Respectfully submitted,

Month of Ketal

IN THE SUPERIOR COURT OF THE STATE OF ARIZONAY &

IN AND FOR THE COUNTY OF MARICOPA

INDEXED

HAL ADAMS

Plaintiff.

NO. 125881

COMPLAIBT

CITY OF SCOTTSDALE, a Municipal Corporation,

Defendant.

Comes now the plaintiff and for claim against the defendant, alleges as follows:

I.

That during all the times herein mentioned, the defendant, City of Scottsdale, was and now is a municipal corporation organized and existing under any by virtue of the laws of the State of Arizona.

II.

That during the months of July and August, 1960, the City of Scottsdale. through its City Council, duly authorized its City Attorney and Mayor to negotiate and execute an agreement for the leasing of plaintiff's land, located at Perry Lane and River Road, near the city of Tempe, as a sanitary land fill and garbage dump site for citizens of said City of Scottsdale.

III.

That on or about August 24, 1960, the defendant's duly authorized agent, Goldon Allison, the city manager of said City of Scottsdale, negotiated and verbally entered into a contract and lease with the plaintiff, Hal Adams. By the terms of said agreetment, defendant agreed to lease and use for the period of one year. plaintiff's land, located at Perry Lane and River Road as a dump site for the citizens of the City of Scottsdale. Said agreement was to be in August 24, 1960, and was to continue for a period of

per month for the use of his properties, located at Perry Lane and River Road.

IV

Plaintiff has complied with all of the terms and conditions of said lease agreement.

V-

Pursuant to said agreement, plaintiff allowed citizens of the City of Scottsdale to dump trash and refuse on his dump site, located at Perry Lane and River Road, near the city of Tempe, for a period of two months without compensation.

VI.

The defendant breached said lease on or about October 26, 1960, by informing plaintiff that the defendant was not going to pay any rent for the use its citizens had made of plaintiff's lands and that the defendant did not consider itself bound by any agreement with the plaintiff, and by refusing and neglecting to pay rents due under said lease.

VII.

That plaintiff has duly presented in writing its claim and demand upon the CITY COUNCIL OF SCOTTSDALE, ARIZONA, for \$2,580.00, which said claim and demand was duly itemized, giving names, dates and particular services rendered and that the amount claimed was justly due; a copy of which claim and demand is hereto attached, is marked Exhibit "A" and by reference made a part hereof. That the said city council of Scottsdale, Arizona neglected and refused to allow said claim. That the said defendant has not paid the same or any part thereof all to the plaintiff's damage in the sum of \$2,580.00.

VIII.

That the defendant by refusing to pay plaintiff his due rent has breached said lease and has damaged the plaintiff in a

further sum of \$12,900.00 which represents the rent due plaintiff under said lease for the remainder of its term, after said breach by reason thereof.

WHEREFORE, plaintiff prays judgment against the defendant as follows:

- 1. For \$2,580.00 which represents the rent for the two month period defendant's citizens used plaintiff's land, together with interest thereon at the rate of six (6%) per cent per annum from October 26, 1960, until paid.
- 2. For \$12,900.00 which represents the rent due plaintiff for the remainder of the term of said lease after the breach by defendant.
- 3. For costs of this suit and such other and further relief as to the court seems just.

SKOUSEN & McLAWS

By John Larry McLaws

STATE OF ARIZONA )
()SS.
(County of Maricopa)

HAL ADAMS, being first duly sworn upon oath, deposes and says: That he is the plaintiff in the above entitled action; that he has read the foregoing complaint andknows the contents thereof; that the same are true of his own knowledge, except as to those matters which are therein stated on his information and belief and as to those matters he believes them to be true.

Subscribed and sworn to before me this 1914 day of 1816/1, 1961.

Notary Public

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My commission expires:

The first Council Committee Meeting of the Town of Scottsdale was held in the home of Jack Sweeney at 301 West First Street, Scottsdale, Arizona.

Meeting called at 8:00 P.M.

Those in attendance were as follows:

Councilmen:

Bill Miller

Mort Kimsey Malcolm White Jack Sweeney

E.G. Scott

Scottsdale Progress Reporter Jim Boyd

Clerk of Maricopa County Board of Supervisors W.O. Glick

Deputy County Attorney F. Haze Burch

Councilmen received Oath of Office from County Clerk Wm. O. Glick. Witnessed by Deputy County Attorney F. Haze Burch and Mr. Jim Boyd, Reporter.

Malcolm White was proposed for Mayor and was so elected by unanimous vote.

Jack Sweeney was proposed for Clerk of Council, and was so elected by unanimous vote.

The Mayor was instructed to contact the Liquor Control Superintendent on the proposed application of transfer of Packaged Store License to the location of the Meig Bldg. in Scottsdale.

Mr. Wm. Messenger was suggested as legal counsel for the Town of Scottsdale and is to be contacted to be present at the next Council Meeting.

The building of Business Buildings was discussed. Holding to the present type of Western Type Building to maintain the present Western atmosphere was decided upon.

Rubbish and Garbage collection and Franchise of such was discussed.

Next meeting to be held at the Calapco Office at 8:00 P.M. Friday July 6, 1951.

Meeting adjourned 9:30 P.M.

Respectfully submitted,

(Signed-Jack Sweeney)

Read and approved July 6, 1961 (sic)

Council Committee Meeting called to order by Mayor Malcolm White, Friday July 27, 1951 at 8:00 P.M. at Calapco Office.

### Those Present were:

Mayor Malcolm White

Councilmen: Mort Kimsey

E.G. Scott

Geo. Cavaliere (sic)

Jack Sweeney, Clerk of Council

Attorney Don Bauman Progress Reporter Jim Boyd

Town population accepted as published.

#### #1 Ordinances

Sec. #	1.	Incorporation
#	2.	Town Seal
#	3-2	Town Government and Powers of Council
#	3-3	Clerk, Magistrate and Attorney
#	4-1	Town Clerk Maximum Salary #4-2 Town Marshall Maximum Salary
#	4-4	Town Attorney Maximum Salary
u #	4-5	Town Council securing bonds
#	4-6	Police Court
ः# <i>c</i>	5-9	Declaring and Emergency

## #2 Ordinance

Procedure of Council

Council Meeting to be the last Tuesday of each month

**Special Council Committee Meetings** 

Special Council Meetings

Questions of policy

Roberts rules of order of meetings

#### Vote taken.

Failure to vote.

Assign gas refund tax to paving and maintaining and cleaning of streets.

Franchise for removal of Garbage (sic) and rubbish

Read letter from Rural Fire Protection Co.

New Telephone Building line to be set back 22 feet from right of way which is 66 feet wide

Mr. Jim Boyd instructed to have Complaint Forms to be printed.

Meeting adjourned, 10:30 P.M.

Respectfully submitted

A Council Committee Meeting was called to order by Mayor Malcolm White, August 14, at 8:00 P.M. in the Calapco Office. Those present were:

Mayor Malcolm White

Councilmen: Mort Kimsey

Geo. Cavaliere (sic)

E.G. Scott

Jack Sweeney, Clerk of Council

Attorney Don Bauman Reporter Jim Boyd

Mr. Louis A. Witzeman, President of the Rural Fire Protection Co. Inc., attended and presented proposed contract to the Town for Fire Protection. Contract terms to be changed from 10 years to 6 years and renewal from 7 years to 3 years. Contract to be binding on successors to present owners. If a man is hired a townsman is to be given preference if he can qualify.

It was decided not to take over Irrigation at present time.

Questioned the possibility of taxing Public Utilities.

Questioned Franchise for removal of Garbage and Rubbish. Instructed to invite Mr. Estes and Mr. Johnson to Council Committee Meeting.

Discussed Papago Hospital Sewage Disposal Plant. Instructed to contact Mr. Marsh of Marsh Airways for details.

Mr. Kenneth Caswell ask to resign as Town Marshall effective July 19.

### Resolutions:

Proposed Hurley Pruett as Town Marshall @ Salary of \$275.00 per month

Motion made and seconded. Vote unanimous.

Purchase Marshall Badge.

Use of Hurley Pruett's car for Marshall Duties @ 0.7 per mile until Town purchases car for purpose.

Post and accept bids for purchase of Four\*Door Sedan for Marshall Duties.

Street sweeping to be paid for by Town @ \$125.00 per month.

Instructed to make a deal with City of Tempe for Housing and feeding Scottsdale Prisoners.

Town to pay Mr. Ben Fox for Town Clerk Duties \$75.00 per month.

Mr. Ben E. Fox asked his resignation as Town Clerk be accepted.

Resignation accepted.

The following proposals were made for Town Clerk.

Mrs. Alvin Brown

Mrs. Les Larson

Mrs. Anna Whiting

Mrs. Scott Mr. Swenson

Mrs. Alvin Brown proposed. Motion made and seconded. Vote unanimous. Mrs. Brown is to receive and initial salary of \$175.00 per month.

Meeting adjourned 12:00 P.M.

Respectfully submitted, (Signed-Jack Sweeney)

A meeting of the Common Council of the Town of Scottsdale was called to order by Mayor White, Friday, Sept. 21, 1951 at 8:00 p.m. in the Calapco Office. Those present were:

Mayor White

Councilmen: Mort Kimsey

Jack Sweeney E.G. Scott Geo. Cavalliere

Attorney Bauman Clerk Virgie Brown

Public

Minutes of the meeting of September 11th were read. Motion to accept minutes as read made by Jack Sweeney, seconded by E.G. Scott. Passed by unanimous vote. Claims 18 to 21 inclusive were presented. Motion to approve claims made by Jack Sweeney, seconded by E.G. Scott. Passed by unanimous vote.

After much discussion Mayor White appointed Dr. Phil Schneider to get estimates of cost on different types of paving and present to the Council in an effort to decide what should be the minimum paving required for Scottsdale streets.

Jack Sweeney made a motion to have the Council contact several engineers, present the paving problem and ask for estimates on a survey and grade block. Also estimates on follow through of any paving done. Seconded by Geo. Cavalliere. Passed by unanimous vote.

Mort Kimsey was appointed by Mayor White to contact engineers.

Possibilities of annexation of the area around 65<sup>th</sup> Street and Indian School Road, was discussed. Mort Kimsey was appointed to contact the residents of that area and find out how many were in favor of annexation.

The contract with Rural Fire Co. was discussed. Attorney Bauman stated that some changes should be made in the wording of several parts of the contract. Mayor White asked Bauman to contact Weitzman of Rural Fire Co. and complete such changes as necessary before the Council approves the contract.

The Estes Garbage Service is to be contacted and asked to have a representative of the firm at the next Council Meeting with figures on the proposed agreement with Scottsdale on the collection of garbage.

On motion of Mort Kimsey, seconded by Jack Sweeney, passed by unanimous vote, Kenneth Caswell is to be given a Police Card of the Town of Scottsdale.

A motion was made by Jack Sweeney, to split Hurley Pruitt's salary. \$175.00 for Marshall's duties and \$100.00 for Superintendent of Streets. Seconded by Mort Kimsey. Passed by unanimous vote.

The Building Code and Electrical Code to be adopted by the Town were discussed. Ordinances to cover both are to be drawn up. A motion was made by Jack Sweeney that the Council adopt the Uniform Building Code by Pacific Coast Building Officials Conference, and the National Electrical Code of the National Board of Fire Underwriters with the exception of two-story buildings in the building code. Seconded by E.G. Scott. Passed by unanimous vote.

The Council was asked to have something from the Town of Scottsdale at the coming State Fair. It was decided by the Council to turn the problem over to the Chamber of Commerce of Scottsdale.

A letter from the Maricopa County Board of Supervisors was read asking the Council to appoint a citizen from the Scottsdale Community to work with the County Director of Civil Defense. No action was taken.

Parking of the merchants and workers in the business area of Scottsdale was discussed. Full cooperation of the business people is to be urged. Suggestions were to park behind their places of business or any place other than the main streets.

There was discussion of the issuing of a franchise for the taxi service in the incorporated area. Applications are to be accepted.

Motion to adjourn was made by Mort Kimsey, seconded by Jack Sweeney, passed by unanimous vote.

Adjourned 11:00 P.M.

Respectfully submitted (Signed-Virgie L. Brown)
Town Clerk

A Special Meeting of the Common Council of the Town of Scottsdale was called to order by the Mayor at 7:30 P.M., November 30, 1951 at 111 So. Brown Ave. Those Present were:

Mayor Malcolm White

Councilmen: M.E. Kimsey

Geo. Cavalliere

Jack Sweeney

Attorney Don Bauman

Clerk Virgie Brown

Absent: E.G. Scott, Councilman

Waiver of Notice

Minutes of Special meeting November 16 were read. Minutes approved as read on motion of Jack Sweeney, seconded by M.E. Kimsey, passed by unanimous vote. Claims 65 to 71 inclusive were presented. Claim 65 in the amount of \$40.29 was approved on motion of Geo. Cavalliere, seconded by Jack Sweeney, passed by unanimous vote. Claim 66 in the amount of \$64.29 was approved on motion of M.E. Kimsey, seconded by Jack Sweeney, passed by vote. Cavalliere not voting. Claim 68 in the amount of \$40.29 was approved on motion of Jack Sweeney, seconded by Geo. Cavalliere, passed by vote. Kimsey not voting. Claims 67, 69, 70, 71 were approved on motion of Jack Sweeney, seconded by Geo. Cavalliere, passed by unanimous vote.

There was discussion on a garbage franchise for the incorporated area. Mr. Cal Estes was present to present offer of Estes garbage Co. Mr. Estes made the proposal of \$100.00 per month against 10% for a permit to operated (sic) in the incorporated area. Proposal to be inforce (sic) for 6 months with option at the end of period. The proposal was taken under consideration by the Council. Mr. Estes is to bring the proposed written agreement to the regular Council meeting Dec. 11.

M.E. Kimsey made motion for Town to take out collision insurance on the car used by Hurley Pruitt. \$100.00 deductibel (sic) for 18 months. Seconded by Jack Sweeney, passed by unanimous vote.

There was discussion on tying the city in with the library now in operation at the Thunderbird Housing Project. It was proposed that Mrs. Woods come before the Council for more discussion.

A motion was made by Geo. Cavalliere that O'Malley's builetin board and one at the Justice of Peace office be designated as the official posting places for posting of Town Ordinances. Seconded by M.E. Kimsey, passed by unanimous vote.

M.E. Kimsey was appointed to take up the matter of house to house delivery of mail with the Postal authorities.

There was discussion on street numbering and possible renaming of some streets. Jack Sweeney and M.E. Kimsey were appointed to work out a plan by which it could be done.

Discussion on Planing and Zoning Commission members. Names to be proposed at next meeting.

Motion to adjourn was made by Jack Sweeney, seconded by Geo. Cavalliere, passed by unanimous vote.

Adjourned 10:15 P.M.

(Signed-Virgie L. Brown) Virgie L. Brown Clerk

A Special Meeting of the Common Council of the Town of Scottsdale was called to order by the Mayor at 7:30 P.M. at 111 So. Brown Ave., Scottsdale, on Friday, December 7, 1951. Those present were:

Mayor Malcolm White

Councilmen: M.E. Kimsey

Geo. Cavalliere Jack Sweeney E.G. Scott

Clerk Virgie Brown

Absent: Attorney Don Bauman

Minutes of meeting Nov. 30 were read. M.E. Kimsey made motion that minutes be approved as read. Seconded by E.G. Scott, passed by unanimous vote.

There was discussion on the garbage permit. Mr. Estes withdrew first offer. Making another of a flat \$100.00 per month or 20% if Town collected for service. Motion was made by Jack Sweeney that the Council consider the second offer of \$100.00 flat fee. Seconded by E.G. Scott, passed by unanimous vote. No action is to be taken until Mr. Estes submits a written agreement.

There was discussion on the naming of streets and numbering of houses in the incorporated area. Discussion centered around a map which had been drawn up by the City of Phoenix Engineering Dept. and the Postal Authorities. More discussion is to be had at the open meeting Dec. 11.

After discussion the parking problem in the business area a motion was made by M.E. Kimsey that the Clerk write a letter to each merchant asking their cooperation in keeping their personal cars and those of their employees parked off the streets during business hours. Motion seconded by Geo. Cavalliere, passed by unanimous vote. Enforcement of such was discussed if the problem could not be worked out with the cooperation of the merchants.

Superintendent of Streets is to contact grader for grading of streets and alleys.

M.E. Kimsey made motion that Mayor and Clerk see about the purchase of office furniture for the new office which is to be ready Jan. 1, 1952. Seconded by Jack Sweeney, passed by unanimous vote.

The appointment of zoning commission members was discussed.

Jack Sweeney made motion to adjourn, seconded by Geo. Cavalliere, passed by unanimous vote.

Adjourned 9:30 P.M.

Submitted by (Signed-Virgie L. Brown) Virgie L. Brown, Clerk

The regular meeting of the Common Council of the Town of Scottsdale was called to order at 8:00 P.M. on Tuesday, Dec. 9, 1952. Those present were:

Mayor Malcolm White

Councilmen: M.E. Kimsey

Geo. Cavalliere E.G. Scott John Shoeman V.D. Frederick

Attorney Baumann Clerk Virgie Brown

Public

Absent: Councilman Jack Sweeney

Minutes of Nov. 12 and Nov. 20 were read. Approved on motion of M.E. Kimsey, seconded-by E.G. Scott, passed by unanimous vote.

Claims 425 to 450 inc. were presented. Motion approving claims was made by E.G. Scott, seconded by M.E. Kimsey, passed by unanimous vote.

Cal Estes of the Garbage Service Co. was present. A garbage service franchise between the Town and Estes was discussed. Attorney Baumann is to work with Estes.

Liquor license application for the enlargement of the Scottsdale Liquor Store at 222 S. Scottsdale Rd.-License No. 578 was approved on motion of M.E. Kimsey, seconded by Geo. Cavalliere, passed by unanimous vote. There was discussion of a new ordinance to control carnivals.

Letters from the Chamber of Commerce announcing the appointment of a Planning and Zoning Board for the Chamber of Commerce were read. It was suggested that the Board serve as an Architectural and Advisory Board to the Town Planning and Zoning Commission.

Letter from the University of Arizona about the Planning and Zoning Conference in Tucson on Dec. 12 and 13 were read. Mayor, Attorney and Clerk are to attend with expenses paid, also any members of the Planning and Zoning Commission who could go.

Motion to adjourn was made by John Shoeman, seconded by E.G. Scott, passed by unanimous vote.

Adjourned 10:00 P.M.

Respectfully submitted (Signed-Virgie L. Brown) Town Clerk



A special meeting of the Common Council of the Town of Scottsdale was called to order by Mayor Malcolm S. White, on Tuesday, May 19, 1953 at 7:30 P.M. in the Town Hall.

Those present were:
Mayor Malcolm S. White
Councilmen:
John Shoeman
Jack Sweeney
George Cavalliere
Mort Kimsey
E.G. Scott
Attorney, Donald J. Baumann
Clerk, Dorothy I. Ketchum
Absent: V.D. Frederick

Minutes of May 12, meeting were read and were approved on motion of E. G. Scott, seconded by John Shoeman, passed by unanimous vote.

Motion was made by George Cavalliere to have M.O. Swenson audit the books of the Town of Scottsdale, seconded by E. G. Scott, passed by unanimous vote.

Motion was made by Jack Sweeney to authorize Hurled Pruitt to purchase a large generator for the Police car, seconded by John Shoeman, passed by unanimous vote.

Motion was made by Mort Kimsey to authorize the Mayor and town Clerk to execute an agreement with the Estes Garbage Service Co. given them the exclusive right to collect garbage, trash and rubbish in the Town of Scottsdale for one year, seconded by Jack Sweeney, passed by unanimous vote.

William Weirick, Ray Parrish, Jim Boyd and Richard Piel were present and were appointed to act as members of the Scottsdale Architectural Advisory Group. K. T. Palmer, B. W. Bell and Glenn Peterson were also suggested to act as members of the group and are to be contacted by one of the members of the appointed group to see if they would be interested. After a discussion it was suggested that the Group call a meeting among themselves to decide just how to carry out their plans and ideas to encourage Western Architecture.

There being no further business to come before the meeting, motion was made by John Shoeman to adjourn, seconded by Jack Sweeney, passed by unanimous vote.

Adjourned at 8:45 P.M.

Respectfully submitted,

Dorothy I. Ketchum, Town Clerk

Minutes of January 2, 1964:

A special meeting of the Scottsdale Mayor and Council was called to order by Vice-mayor C W Clayton at 5:00 P.M. Wednesday, January 2, 1964 in the Council Chambers.

Roll Call:

Present: Vice-mayor C W Clayton Councilmen Herb Caywood. " S. . I . Tom Hunter

Boyd Parker Henry Reuss John Woudenberg

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Manager Ken Williams Attorney Osmond Burton Clerk Fern Anderson Absent: Mayor William Schrader

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Garbage Bids

1 7 1 1 Mr. Clayton announced that the meeting was for the purpose of awarding the bids on #118, (5 each tandem axle truck for 30-yd refuse packer body and front end loader); #119, (6 ea 4-wheel drive cab and chassis); and #120, (garbage collection, storage units, and initial supervison thereof).

\$500 is guil a se suffice to Manager Williams added that the city had been working on this project for some time in an attempt to provide the best possible service to the city; that a number of alternatives had been considered and much time had been spent with vendors in the field.

The following memo from Mr. Williams to the Mayor and Council was included in the minutes on motion of Herb Caywood, second by Boyd Parker, passed by unanimous vote.

"In November of 1963, this office:recommended to the City Council that the collection of refuse by City employees and equipment and under the direction of the Public Works Department be considered. Our report stressed the various advantages and disadvantages of this change from a contract collection operation.

Normally the contract collection in a community is awarded on a competitive basis to the lowest responsible bidder, and contractos must furnish suitable performance bonds. This has not been done in Scottsdale due to the ruling of the Corporation Commission which alleged that a "franchise" was granted by them to Garbage Service Company. Thus, the City of Scottsdale has not had the opportunity of dealing with other companies in this matter.

The recent decision by the Arizona Supreme Court which restores competition to this area could not have been anticipated in our recommendation to the City Council. However, competent legal advice had indicated that we could enter into municipal operations without concern for the so-called "franchise" terms. The choice facing us was to enter into municipal operations or to negotiate a new contract with Garbage Service Company.

You may recall that negotiations along this line were attempted by the City approximately one year ago. In these negotiations a minor adjustment relative to a vacancy factor was accomplished and a major accomplishment was to change the concluding date of the contract. To accomplish this required that we withhold well over \$200,000 in back payment, apply a considerable amount of pressure to the company, and face a legal suit. During the course of our discussions, the matter of fees was reviewed on a number of times directly with Mr. Cal Estes and Mr. L E Redman. In no case did they indicate they were willing to reduce the charges paid by the City of Scottsdale for their services, either in the residential or commercial areas. Some discussion in regard to lowering costs of commercial and industrial collection did take place. However, this was on the

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premise that the City of Scottsdale would supply Garbage Service with the necessary equipment (containers and packing trucks) to do the job and that they would perform if the terms of a lease were sufficient to reimburse them for this service.

When the newspaper accounts (early in November and December) began to appear of our request for quotations on supplying the City with the equipment, this office was contacted by Mr. Redman. The City M anager and the City Attorney were invited to the Stockyards Restaurant to meet with Mr. Estes and Mr. Redman on a Saturday to discuss this matter. The Mayor was also invited but it so happened that he was out of town. It was indicated to Mr. Redman that a more suitable place for the discussion would be in the City Hall either in the Mayor or Manager's office or in the Conference Room and this was agreed to. During the following week, the City Manager was contacted by Mr. Redman to the effect that the meeting could not be held since Mr. Estes was out of town and would not be available. On this and other occasions, it was indicated to him that we certainly would be willing to discuss and review the cerrent contract.

Subsequent to this, Mr. Redman visited the Mayor and apparently in the discussion that followed, indicated that we could expect to be sued even going to the point of naming the amount, including, as I understand, some \$40,000 for the anguish and problems that they would suffer in giving up their "franchise" arrangement which they valued at \$400,000. In no discussion with them has there been any indication that there would be an adjustment in rates.

A number of private contractors have been referred to the City Manager's office or have made contact with us. In one particular case, the party represented a frim in California. There have been others from various parts of the United States who have looked upon the possible City contract with some favor. We have not entertained specific bid proposals which would show rates to be charged. However, in no case in our informal discussions has there been any indication that these private companies could perform for less than the costs proposed under our recommendation for municipal operations.

Many people do believe that contractors will render satisfactory and effective service because it is good business to do so. And no one can deny that the profit incentive is a strong motive for efficient management and on the whole it would appear sufficient to enable contractors to compete successfully in the field of refuse collection.

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However, experience under the contract method has not been entirely satisfactory. Certainly this is true of Scottsdale's experience. There are a few outstanding examples of excellent operations by contractors but on the whole the citizens have not approved of contract collection and have demanded a shift to other methods. Numberous explanations have been offered for the failure of this means of handling the work. Among which are that many of the contractors do not actually use good business methods, that contract periods are too short to permit economical operations, but that agreements are many times made on a political rather than on a competitive basis and that contractors fail to develop good relations with the public.

We have noted particularly in Scottsdale there has been a tendency to sacrifice sanitation to profits. Another item that we have been kept somewhat in the dark on is that the contractors are reluctant to answer complaints promptly or to correct conditions beyond the requirements of the letter of the specifications. This leads to strained relations between the public and the city government.

Contract operations must be continually inspected by competent City officials and employees adding to the total cost of the collection work. The limited duration of such contracts normally makes it necessary to absorb amortization costs in a period shorter than the economically useful life of equipment thereby

the second second increasing the cost of the service. Again it is difficult to develop a comprehensive and fair specifications which will control unforeseen ocurrences.

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(a) (a) (a) We feel and this has been proven that contractors may cut corners whenever an opportunity develops with the result that the standard of service is reduced and the cost of control increased. In addition, the City of Scottsdale is faced with another problem and that being the fact that under the current Charter no Council can enter into a contract for longer than the life of the particular Council in operation. This means, in effect, that private contractors are discouraged from applying to the City since they cannot possibly regain or recoup their commitments and thereby materially reduces the contractors who are availble to provide this service. Essentially, this means then that we must deal with those who are located and operating here in the State of Arizona. I think that rather than my commenting any further in regard to their status I would simply-refer the Council to the newspaper articles that have appeared in regard to these organizations. 18

Following our review of our situation which has been fairly intensive since August of 1963, we have arrived at the inescapable conclusion that municipal operations would be to this City's best interest. We cannot conceive of a commercial operator who can meet the costs involved in this opeation (estimated residential unit cost of \$1.33 per month) as efficiently and economically as can the City or that would even begin to offer a comparable service. Scottsdale will be one of the few cities in the United States offering a complete containization program. The only exceptions being in the residential areas. We feel that we can do this at a cost substantially below that currently being paid. 11 . · Strate Con-100

No administration likes to make a sizeable investment of the taxpayer's money without taking a look at the economic justifications involved, and Scottsdale is no exception. However, I think once we face the facts, the entry of the City into the proposed municipal program can be quickly justified. The savings represented by this proposal is comparable to 36¢ on the current City tax rate. This money could be more profitably spent in improving overall City services, including the building of much needed streets and maintaining them. While we recognize the significance of this major step that will be taken, we also feel that we are recommending for purchase the best collection and disposal method as well as the best refuse collection equipment available today. With our planning for an entire refuse collection system and the desire to serve the public, it is anticipated that we can have one of the best operations within this state or for that matter within the United States.

Therefore, it is recommended that in regard to bid item \$118 that the bid proposal of International Harvester Company for a conventional cab, F.O.B. Galion, Ohio, be accepted as the lowest and best responsible bid. That the second low bidder of New Dodge City on #119 be accepted as the lowest and best responsible bid; that the low bidder, International Harvester, did not meet specifications; that the difference of \$100 would provide a better piece of equipment and that the further allowance regarding a truck bed (not needed) make it a better purchase. That the proposal of Western Truck Equipment Company under Bid #120 proposing 5 each 30-cubic yard collection units and Items 2 and 3 proposing containers for fixed as well as the train system be accepted as the lowest and best responsible proposal. In addition it is proposed that the Mayor and City Clerk be authorized to ex ecute contract to accomplish the above. \*\* \*\*

Looking forward to the next fiscal year, it is recommended that adequate provision be made in the 1964-65 budget to reduce the costs of equipment by early refunding of the lease- purchase arrangements. This can be done."

Boyd Parker requested that the manager make a comparison between the estimated 1 m (g) (g)

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per unit and per unit cost, annual outlay and estimated outlay. Mr. Williams replied that, at the present time, the city is paying \$2.25 for residential, which does not include apartments that have a different rate. In addition to the \$2.25, the city provides all the billings on the commercial accounts, overhead in the Finance Department; a full-time sanitation inspector plus the offices of the Public Works Director and the City Manager. The costs are in the area of \$2.50 when they are all added and necessary adjustments are made. These items were surrendered to the city for 25¢ reduction in rates by Garbage Service and which probably cost the city 25¢ to perform. The city is proposing to pay off about \$200,000 on the equipment in three years and an option to pay up in three years would be desirable.

The current year's budget for garbage collection is over \$455,000 plus \$75,000 capital outlay! and it is anticipated that in the next year the cost of garbage service at current contract price would be over \$524,000. The Garbage Service Company has never offered to adjust the price in any discussions with it. It was a conservative estimate that the city would be able to save \$100,000 per year over the next 10 years with better service.

Attorney Carl Roe, representing E-Z Pack, requested that more consideration be given the bid before awarding as it had been indicated to him that, in some respects, the equipment recommended for approval did not meet the specs as published; that the recommended equipment did not have a body long enough to contain a full 30 cubic yards but was 24 cubic yards with a 6 cubic yard bustle which would have to be emptied manually or by gravity.

Mr. Williams replied that a recommendation had been made to the Council on the basis of the total apecifications and he felt that this particular piece of equipment met the specifications; that, on the information provided, there was no basis for disqualification of the bid; that no formal protest had been received from the operators; that the administration had acted in extreme good faith in trying to make it possible for everyone to bid and that his recommendation was the only possible one that could be made.

Public Works Director Stragier added that the approved proposal contained a statement that the specs would be met; that the low bidder had indicated that he intended to propose a packer body with a capacity somewhat in excess of 24 cubic yards but not a full 30 yards, with a bustle attachment to make up the difference and that it was a matter of interpretation as to whether or not it met specifications.

Mr. Williams stated that the low bidder had had to establish a bond that the specs would be met.

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John Woudenberg asked if the equipment would eject the load and Mr. Johnson, representing Lod-All, replied, "Yes", that his firm could not operate otherwise and that they had much more equipment than the competition on the order of ten to one in service in the nation.

Mr. Knowles believed that it was not absolutely true, that it would eject full load, as it could not go into the bustle on the back end. The platen does not enter the bustle. The tail gate must be raised and the contents dropped out by gravity.

Upon the recommendation of Mr. Williams, Boyd Parker moved that the Council

Upon the recommendation of Mr. Williams, Boyd Parker moved that the Council adopt the recommendation of the city manager and that the Vice-mayor and City Clerk be authorized to execute a contract agreement based upon that recommendation for the bid award for the refuse collection equipment, second by Herb Caywood, passed by unanimous vote.

No further business to come before the Council, the meeting was adjourned at 5:50 P.M. on motion of John Woudenberg, second by Henry Reuss, passed unanimously.

Respectfully submitted,

Fen anderson

A special meeting of the Common Council of the Town of Scottsdale was called to order by Mayor Malcolm White, Tuesday, February 5, 1957, at 8:00 o'clock P. M., in the Town Hall.

Roll call:

Present:

Mayor Malcolm White Councilmen:

George Cavalliere

M. E. Kimsey
E. G. Scott

Attorney Donald Baumann Clerk Dorothy Ketchum

Joe Willmoth John Shoeman Lute Wasbotten

Planning and Zoning Board also present.

Mayor Malcolm White informed the Council that the Garbage Service Company had presented another proposal to the Town of Scottsdale for garbage collection. Proposal designated they will pay the Town 2% of gross receipts; also informed that Mr. Estes was stopping payment of \$100.00 fee for Garbage Franchise after this month.

Upon motion of Lute Wasbotten, second by M. E. Kimsey, passed by unanimous vote; it was recommended that the sign ordinance be amended as follows:

Under Commercial A & B Districts and Industrial A Districts.

- 1. Include car rental signs, New and Used car lot signs under the same restrictions as parking lot signs.
- 2. Change part referring to signs on inside of windows to signs on windows.
- 3. Change merchant group signs to be subject to the approval of the Town Council instead of Board of Adjustments.

Subdivision Plat for Ralph Staggs, located at the Southeast corner of Indian School and Hayden Road was presented. After study by the Town of Scottsdale Planning and Zoning Board and the Town Council motion was made by Lute Wasbotten, second by M. E. Kimsey, passed by unanimous vote that recommendation be made to the Maricopa County Planning and Zoning Board that the Plat not be approved due to the fact that some of the lot areas and widths do not meet requirements of the Town of Scottsdale.

Melrose Meadows Subdivision Plat, a subdivision West of Crosscut Canal and South of County Estate was presented. After study by the Town of Scottsdale Planning and Zoning Board and the Town Council motion was made by M. L. Kimsey, second by E. G. Scott, passed by unanimous vote that recommendation be made to the Maricopa County Planning and Zoning Board that Melrose Meadows subdivision Plat be approved.

Mayor Malcolm White was designated to attend the Phoenix Community



- M. E. Kimsey motion to order the Mayor to execute the Supplemental Agreement between the Town of Scottsdale and Reamy C. Fitch and Associates, dated February 5, 1957, second by E. G. Scott, passed by unanimous vote.
- E. G. Scott made motion that the Town Treasure establish a separate planning account in the First National Bank of Arizona Scottsdale Branch for funds received from the United States Public Works Plan Preparation Agreement, second by M. E. Kimsey, passed by unanimous vote.

Resolution No. 43, a Resolution authorizing filing of Application with the Housing and Home Finance Agency, U. S. A., for a loan under the terms of Public Law 345, 85 Congress was adopted on motion of George Cavalliere, second by Joe Willmoth, passed by unanimous vote.

Mr. Fitch and Mr. Wallace present at the meeting discussed with the Council possible publicity for the Scottsdale sewage collection and disposal system. Mr. Wallace was instructed to write an article on the same and present at the next Council meeting.

No further business to come before the meeting the meeting was adjourned at 11:25 o'clock P. M., on motion of E. G. Scott, second by M. E. Kimsey, passed by unanimous vote.

Respectfully submitted,

A special meeting of the Mayor and Council of the Town of Scottsdale was called to order by Mayor M. E. Kimsey, Tuesday, January 24, 1961, at 8:00 o'clock P. M., in the Town Hall.

Roll Call:

Present:

Mayor M. E. Kimsey
Councilwoman Moya Kelley
Councilmen: John Knudsen
John Marron
Manager Robert McNutt
Attorney George Song
Clerk Dorothy Ketchum

William Schrader Robert Hutchins

Absent:

Councilman John Pickrell

Minutes of January 17, 1961, Council meeting were approved after the Aye votes cast for the adoption of Ordinance No. 101 was changed from 6 to 5 votes; upon motion of Moya Kelley, second by Robert Hutchins, passed by unanimous vote.

Garbage and rubbish collection proposal from the Garbage Service Co. \*\*
was discussed. Manager Robert McNutt reported he had received calls
from persons that were interested in a garbage pick up contract.
He recommended advertising for bids for garbage collection when
it was decided to do anything about garbage collection; this way the
Town could get a better rate. He did not recommend that property
owners be required to have trash pick up when they have garbage collection. He informed it would be possible to bill for garbage collection by combining it with the sewer billing.

It was reported there had been complaints about the raise in fees for garbage collection in the commercial districts. It was decided to check with the Corporation Commission about the raise in fees and to delay any action concerning garbage collection until budget time.

Transfer of Dorothy I. <u>Ketchum Trustee Account funds</u> to the General Fund was delayed until the Auditor can be consulted.

Celebration for the Tenth Armiversary as an incorporated community for the Town of Scottsdale was discussed. It was recommended that an anniversary report be published. Moya Kelley reported that Kathryn Braswell would like to help with the history of Scottsdale. The date for the occasion is to be decided upon later. It was requested that the Manager proceed with plans for the same.

Kenneth McDonald was appointed as Chief Building Official until other arrangements can be made in the budget, upon motion of John Marron, second by Robert Hutchins, passed by unanimous vote.

Tabulation of the Bids for the sewer line canal crossing at Monte Vista and Indian School Road was presented as follows:

Carl Roe and Roy R. Petsch were appointed to serve as Town Attorneys at \$800.00 per month, retainer fee, upon motion of William Schrader second by John Knudsen, passed by unanimous vote.

No further business to come before the meeting, the meeting was adjourned at 11:00 o'clock P. M., upon motion of John Knudsen, second by William Schrader, passed by unanimous vote.

Respectfully submitted,

Dorothy 1. Ketchum, Clerk

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April 11, 1961

A special meeting of the Mayor and Council of the Town of Scottsdale was called to order by Mayor M. E. Kimsey, Tuesday, April 11, 1961, at 8:00 o'clock P. M., in the Town Hall.

Roll Call:

Present:

Mayor M. E. Kimsey

Councilmen: C. W. Clayton

William Flanigan

John Knudsen Manager Robert McNutt

Attorney Roy Petsch Attorney George Song Clerk Dorothy Ketchum John Marron Arthur Petersen William Schrader

Heinrick A. Thiele, Consulting Hydrologist, was employed to make an underground water supply survey north of the canal and the Scotts-dale area as outlined in the proposal presented by Mr. Thiele, upon motion of Arthur Petersen, second by William Flanigan. Canvas of the vote showed Councilmen William Flanigan, John Knudsen, Arthur Petersen and Mayor M. E. Kimsey voting Aye., Councilmen C. W. Clayton, William Schrader and John Marron voting Naye. Motion passed by majority vote.

Councilmen C. W. Clayton and John Marron objected to the motion because they felt the area north of the canal should be a part of the incorporated area before a survey was made; that a lot of the information required could be obtained from public records; that there was a better source of supply through the Water Users.

ORDINANCE NO. 112, AN ORDINANCE OF THE TOWN OF SCOTTSDALE ESTABLISH-ING A PUBLIC LIBRARY PROVIDING FOR THE ADMINISTRATION AND USE THERE-OF AND PROVIDING FOR THE ADOPTION OF RULES AND REGULATIONS AND PRE-SCRIBING PENALTIES was read in full by the Town Manager, Robert McNutt, Upon motion of William Schrader, second by Arthur Petersen, passed by unanimous vote; ORDINANCE NO. 112 was read for the second and third time by title only; thereupon motion of John Marron, second by William Schrader, ORDINANCE NO. 112 was adopted. Canvas of the vote showed Councilmen William Schrader, John Marron, Arthur Petersen, C. W. Clayton, William Flanigan, John Knudsen, and Mayor M. E. Kimsey, voting Aye. Naye votes - none. ORDINANCE NO. 112 adopted by unanimous vote.

The following persons were appointed as member of the Library Steering Committee for the following terms: Term ending June, 1962 - Dorothy Bolles, Anne Chapman, Frances Smith. Term ending June 30, 1963 - Eve Fladell, Margaret Kent, Chris Willemsen. Term ending June 30, 1964 - Joyce Creek, Lorraine Johnson, Wildes Wilson, upon motion of John Knudsen, second by William Schrader, passed by unanimous vote.

ORDINANCE NO. 113, AN ORDINANCE OF THE TOWN OF SCOTTSDALE FOR THE PURPOSE OF ABANDONING AND VACATING A 16 FOOT ALLEY LYING WEST OF LOTS 145 THROUGH 162 INCLUSIVE, SCOTTSDALE COUNTRY ACRES NUMBER 2 AS RECORDED IN BOOK 89, PAGE 2, MARICOPA COUNTY RECORDER, ALL IN SECTION 24, T2N, R4E, G&SRB&M, MARICOPA COUNTY, ARIZONA, AUTHORIZING AND DIRECTING THAT SAID ABANDONED AND VACATED ALLEY BE CONVEYED TO THE OWNERS OF THE ADJOINING PROPERTY THEREOF; AND DECLARING AN EMERGENCY was read in full by Attorney George Song. Upon motion of John Marron, second by John Knudsen, passed by unanimous vote. ORDINANCE NO. 113 was read for the second and third time by title only; thereupon motion of John Marron, second by John Knudsen, ORDINANCE NO. 113 was adopted with the provisions that underground garbage receptacles be provided on the front of the lots not having an alley. Canvas of the vote showed Councilmen C. W. Clayton, William Flanigan, John Knudsen, John Marron, Arthur Petersen, William Schrader and Mayor M. E. Kimsey voting Aye. Naye votes - none. ORDINANCE NO. 113 was adopted by unanimous vote.

The Mayor and Town Clerk were authorized to execute the Agreement by and between the Town of Scottsdale and Garbage Service Co. for the operation of a sanitary landfill for a period of three (3) years and another three (3) years mutually agreed upon; upon motion of John Marron, second by William Schrader, passed by unanimous vote.

The Mayor and Town Clerk were authorized to execute the Agreement by and between the Town of Scottsdale and Garbage Service Co. to provide both garbage and trash collection service for a period of three (3) years and another three (3) years mutually agreed upon; upon motion of John Marron, second by William Schrader, passed by unanimous vote. Agreement is to include agreement to dailey remove and dispose of the garbage in the Town's Street receptacles with no charge.

SCOTTSDALE GARDENS TENTATIVE PLAT, a subdivision located west of Granite Reef Road between Jackrabbit and Vista Drive, being a portion of No. Sw., of Section 13, T2N, R4E, G&SRB&M, Maricopa County, Arizona, was tentatively approved in order that the Parks Board could investigate a possible park area on the property west of the subdivision and subject to a 130 foot street dedication to the west of the subdivision and providing underground garbage receptacle; upon motion of John Knudsen, second by C. W. Clayton, passed by unanimous vote.

A petition was presented requesting that the Governing Body of the Town of Scottsdale extend and increase its corporate limits to embrace certain territory located at the corner of Tangerine and Thomas. Road, (3 lots). Petitions represented 100% of the assessed valuation in the area to be annexed.

After examining the petition and being of the opinion that the same was in due form and that the petition represented over fifty-one (51%) per cent of the required assessed valuation of the real and personal property of the area to be annexed; ORDINANCE NO. 111, AN ORDINANCE ANNEXING THE TERRITORY CONTIGUOUS TO, AND NOT ALREADY INCLUDED WITHIN, THE CORPORATE LIMITS OF THE TOWN OF SCOTTSDALE, AND DECLARING AN EMERGENCY was read in full by Town Manager Robert McNutt. Upon motion of Arthur Petersen, second by William Schrader, passed by unanimous vote; ORDINANCE NO. 111 was read for the second and third time by title only; thereupon motion of Arthur Petersen, second by William Flanigan, ORDINANCE NO. 111 was adopted. Canvas of the vote showed Mayor M. E. Kimsey, Councilmen C. W. Clayton, William Flanigan, John Knudsen, John Marron, Arthur Petersen and William Schrader voting Aye. Naye votes - none. ORDINANCE NO. 111 was adopted by unanimous vote.

A petition was presented requesting that the Governing Body of the Town of Scottsdale extend and increase its corporate limits to embrace certain territory located between Pomelo Road and the Arizona Canal, east of 56th Street. Petitions represented 100% of the assessed valuation in the area to be annexed.

After examining the petition and being of the opinion that the same was in due form and that the petition represented over fifty-one (51%) per cent of the required assessed valuation of the real and personal property in the area to be annexed; ORDINANCE NO. 115, AN ORDINANCE ANNEXING THE TERRITORY CONTIGUOUS TO, AND NOT ALREADY INCLUDED WITHIN THE CORPORATE LIMITS OF THE TOWN OF SCOTTSDALE, AND DECLARING AN EMERGENCY was read in full by Town Manager Robert McNutt. Upon motion of William Schrader, second by William Flanigan, ORDINANCE NO. 115 was read for the second and third time by title only, passed by unanimous vote; thereupon motion of John Marron, second by John Knudsen, ORDINANCE NO. 115 was adopted. Canvas of the vote showed Mayor M. E. Kimsey, Councilmen C. W. Clayton, William Flanigan, John Knudsen, John Marron, Arthur Petersen and William Schrader voting Aye. Naye votes - none. ORDINANCE NO. 115 was adopted by unanimous vote.

Adoption of ORDINANCE NO. 114, AN ORDINANCE AMENDING THE BUILDING, ELECTRICAL AND PLUMBING CODES TO PROVIDE CERTAIN PROVISIONS FOR SUBDIVISION DEVELOPMENTS was tabled in order to amend the amendment to include individual resident builders and for further investigation, upon motion of John Marron, second by John Knudsen, passed by unanimous vote.

Motion was made by John Marron, second by William Schrader that the Town Manager be instructed to notify the City of Phoenix Officials that the Town of Scottsdale was willing to discuss any mutual problems at any time with them. Canvas of the vote showed Councilmen C. W. Clayton, William Flanigan, John Knudsen, John Marron, and William Schrader voting for the motion. Councilman Arthur Petersen voting against the motion. Motion passed by majority vote.

After Jack Evans, Chairman of the Citizens Annexation Committee, questioning how the motion affected annexation; motion was made by William Schrader, that the Council was not backing down on annexation and that they would give the Citizens Committee all the backing possible, motion seconded by John Marron, passed by unanimous vote.

New perspective of the Bank Building to be constructed on North Scottsdale Road was approved upon motion of John Knudsen, second by Arthur Petersen, passed by unanimous vote.

Perspective of George Thorndike Office and Beauty Parlor Building to be constructed on Western Park Drive was approved as revised with western railing above the porch, upon motion of C. W. Clayton, second by William Flanigan, passed by unanimous vote.

Perspective of the addition to the Scottsdale Progress building on South Ball Park Plaza was approved as recommended by the Architectural Board upon motion of John Knudsen, second by Arthur Petersen, passed by unanimous vote.

No further business to come before the meeting, the meeting was adjourned at 11:00 o'clock P. M., upon motion of John Knudsen, second by William Flanigan, passed by unanimous vote.

Respectfully submitted,

Dorothy I. Ketchum, Clerk

DOW BEN ROUSH ON TITLE & TROST BLUE, PHOENIX, ARIZONA ALPINE 2-8809

# AGREENENT

THIS MEMORANDUM OF AGREEMENT made and entered into as of the / day of // 1961, by and between the CITY OF SCOTTSDALE, a municipal corporation, hereinafter referred to as "City," and GARBAGE SERVICE CO., an Arizona corporation, hereinafter referred to as "Company."

#### RECITALS:

WHEREAS, City desires to furnish for the convenience of residents of City a dump area, equipment and labor necessary for operating a sanitary landfill service within three miles of the city limits of City.

WHEREAS, Company is lessee and operator of a certain dump site located just south of the city limits of Scottsdale, Arizona and is able to furnish the said dumping area, labor, supervisors, personnel, and operating technique to make the said sanitary landfill service available to residents of City.

NOW, THEREFORE, for and in consideration of the mutual covenants hereof, the parties agree:

1. Company agrees to furnish the said dump area or other dump areas within three miles of the city limits of City and all labor and supervision necessary for operating thereon a sanitary landfill service in accordance with the following minimum requirements:

The said dump area or fill shall be open from 8:00 a.m. to 6:00 p.m., Monday through Saturday, and on one Sunday each month. These periods shall be known as designated working hours. The information concerning working hours shall be posted prominently and it will be the responsibility of Company to provide and maintain signs at all entrances to the area, which signs shall inform the public of the working hours of the said

area. The said signs shall be clearly lettered and not less than 5 feet in size. The public shall have access to the area or fill during designated working hours for the purpose of dumping and cover of refuse at portions of the working face as designated by Company personnel. Company will not be required to accept cesspool pumpings, car bodies, large tree stumps or other materials not ordinarily disposed of in a sanitary fill operation. Public access to the working face of the fill may be interrupted for convenience in operation for not more than 20 minutes in any consecutive minutes of the designated working hours. Company will provide at least one suitable safe two-way graded access road to the landfill area from the point of entrance into Company's land.

Company will provide a supervisor familiar with the proper operation of a landfill disposal operation to direct dumping of refuse and otherwise supervise the operation, which said supervisor shall be present during all designated working hours.

Burning of trash or garbage will not be permitted at any time and it shall be the duty of Company to extinguish any fires which may occur in the landfill site or area.

Public scavenging will not be permitted and.

Company shall be responsible for public scavenging. Portable fencing of a type and height to prevent light trash from being

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 carried out of the landfill area by winds shall be erected and maintained by the Company. Accumulated trash at this barrier will be disposed of by the Company weekly in order to reduce the possibility of creating a fire hazard.

The Company shall be responsible for insuring that all material placed on the working face shall be spread and well compacted before covering.

The Company is responsible for providing that all putrescible refuse shall be covered within 24 hours after it arrived in the landfill site with a nightly "skincoat" of four inches to six inches of earth. The cell wall shall be not less than six inches in thickness. The compacted top cover of earth shall be not less than 30 inches in depth when landfill operations are completed.

Final cover shall provide for surface drainage water shed in conformity with the adjacent areas.

All necessary precautions shall be taken by the Company to prevent exposure of putrescible garbage, fly breeding, rat harborage and obnoxious odors. The Company's operation shall be insured as follows: Public liability, \$100,000.00 - \$300,000.00 and property damage \$25,000.00, both accident and occurence liability.

The Company shall cooperate fully with the City, County, and State Public Health Departments.

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- 2. City agrees to pay to Company for the service and facilities above described the sum of \$2,000.00 per month, on the 10th day of each and every month from and after May 1, 1961, payment to be made in the customary and usual manner for payment of City obligations. Company agrees that no charge will be made to any passenger car or station wagon desiring to dump refuse at said site and that trucks and commercial haulers shall be charged a fee in accordance with the Maricopa County schedule of charges for such dumping service at county sanitary landfill dump sites.
- 3. In the event of failure to perform, or breach of any of the covenants herein contained, either party may inform the other in writing of such omission or breach, giving the other party ten days to correct said omission or breach. If said correction is not made, either party may give the other party 30 days notice in writing of cancellation of this contract, which said notice shall specify the grounds or reasons for cancellation.
- 4. This agreement shall be in full force and effect for a period of three years from its effective date, which date is hereby agreed by the parties hereto to be May 1, 1961, provided however, this agreement shall be automatically renewed for a three-year period unless both parties mutually agree not to continue this agreement.
- 5. Company agrees to at all times operate said public sanitary landfill disposal operation as servants of the general public and so as to serve the convenience of the people of Scottsdale and to conform to the highest sandtary and public health regulations and requirements.
- 6. The effective date of this contract is the 1st day of May, 1961.

IN WITNESS WHEREOF, the parties have affixed the signature of their properly designated officers the day and year first above written.

CITY OF SCOTTSDALE, a municipal corpora-

By M.E. Huerzy Mayor

ATTEST:

Almothy Melchum

Approved as to form:

Roghtetach

GARBAGE SERVICE CO., a corporation

By Mary C. Easter

ATTEST!

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 EXHIBIT #27

Minutes of November 28, 1961

The special meeting of the Mayor and Council of the City of Scottsdale was called to order by Mayor M.E.Kimsey at 8:00 P.M. Tuesday, November 28, 1961.

Roll Call:

Present: Mayor M.E.Kimsey

Councilmen William Flanigan Arthur Petersen John Marron

William Schrader

John Knudsen

Acting City Manager James Smith

Attorney Osmond Burton City Clerk Dorothy Ketchum

Absent: Councilman C.W.Clayton

The minutes of November 21, 1961 were approved on motion of William Flanigan, second by William Schrader, passed by unanimous vote.

At the request of Mrs. Anthony Elias, Chairman of the Holly Fair of Our Lady of Perpetual Help Parish, it was moved by William Schrader that the city lift all regualtions governing carnivals for the benefit of Our Lady of Perpetual Help Church and allow them to operate a carnival December 3 for one day for the benefit of the church, second by Arthur Petersen, passed by unanimous vote.

Authorization was requested by James Smith to install 19 street lights at the estimated cost of \$61.75 per month in the Papago Parkway area and to add them to the existing contract with the Salt River Project.

John Knudsen moved that the city approve the installagion of 19 lights as petitioned at West Moreland between 66th and 70th Sts. W Culver between 66th and 68th Sts., W Latham between 66th and 68th Sts., Willetta between 70th and 71st St., second by  $A_r$  thur Petersen, passed by unanimous vote.

TENTATIVE PLAT OF PATIO HOUSE, a portion of Se 1/4, SW 1/4, Section 14, T2N, R4E, G&SRB&M, bordering and including Woodmere Fairway and Woodmere Circle, was presented to the Council with the recommendation of the Planning and Zoning Board that it be approved with the following stipulations: 1. That 36' of pavement will be laid on Woodmere Fairway; 2. An 8' easement will be given on the West boundary for possible utility and alley use.

Mr. Silverman, of Paradise Valley Guest Ranch, wanted to know what type of buildings would be on this property, whether the owner would be financially able to complete the development, and if the property was going to be walled between his property and the Patio House Tract.

Don Collar, of Collar, Williams & White, represented the Patio House Tract Tentative Plat, informed that the property is zoned R-3, D-6, that the units will vary in relation to the size of the tracts, the property would be walled, there would be 66 one-story individual units of 57 two-bedroom units of 1200 square feet, and nine three-bedroom units of 1500 square feet. The purchasers of these units would agree to join the association for the perpetual maintenance of the area which would be tract 12, recreational area, and the front yards. All unlities will be underground and the tract would be connected to the Scottsdale sewer system. All the houses will be built by the developer and they well be of Old English design, with two-car garages.



Frank Haver & Associates are the architects. If the developer could not finish the tract as planned, the city would be protected from cheaper houses by the fact that building permits would have to be issued.

John Marron commented that the only thing before the Council was the lay-out of the tract, streets, etc. Mr. Petersen agreed and added that when the owner is ready to build, a final plat must be presented for approval.

William Schrader moved that the TENTATIVE PLAT OF PATIO HOUSE TRACT be approved, with the recommendation of Planning and Zoning, second by Arthur Petersen.

John Marron moved to table it for one week to get the written approval of the city engineer and for more discussion time, second by William Flanigan. A canvass of the vote showed William Flanigan, John Marron voting "Aye," John Knudsen, William Schrader, Arthur Petersen voting "Nay," The motion failed.

John Knudsen's reasons for voting "Nay" were that Planning and Zoning has approved it, they evidently have gone over it fairly thoroughly. The Council are considering only the plat, not the zoning.

John Marron inserted that the Council was talking about good engineering practices and the Council policies require the written approval of the city engineer on all plats in addition to the fact that they are supposed to be sent through the Parks and a few other organizat ons, none of which have apparently approved these. Whether there is a need for it or not, and I think we should be consistent in our procedure.

William Schrader moved to approve the plat with the recommendations of the Planning and Zoning Commission, second by Arthur Petersen. A roll call of the vote showed William Flanigan, John Marron voting "Nay"; John Knudsen, Arthur Petersen and William Schrader voting "Aye." The motion carried by a majority vote

FINAL PLAT OF INDIAN SHADOWS UNIT II, a portion of the SE 1/4, SE 1/4, Section 13, T2N, R4E, G&SRB&M, bordering the Salt River Indian Reservation and Coronado Drive, was presented to the Council with the recommendation of the Planning and Zoning Board that it be approved with the following stipulation: That the name of Orange Blossom Lane be changed as there are others in the area of this name.

Request for approval of Indian Shadows Unit II was made by Jim South of Engineering, Inc. of America. There have been no changes from the tentative plat approved by Planning and Zoning July 10 with the stipulation that there be 7,000 square feet per unit. He inquired if the plat could be approved without the new street name entered on it, if it could be approved subject to the engineer's approval.

William Schrader moved to approve with the recommendation of the Planning and Zoning Board as it appeared that there were no changes from the tentative plat, that the engineer approve it, the name change be approved, and that there are no objections from the Park Commission, second by Arthur Petersen.

Mr. South questioned what would have to be done to get approval for the name change, and he was told that he would have to appear before the Council.

John Marron moved that the decision of approval be tabled for one week, for the plat had to be returned for signature, it is not an emergency, no city engineer approval, and it just came to Planning and Zoning the evening before, second by William Flanigan. A canvass of the vote showed William Flanigan, John Marron, and John Knudsen voting "Aye"; William Schrader and Arthur Petersen voting "Nay." Motion carried to table approval of Indian Shadows Unit 2.

The following Claims were presented for approval:

General Fund Claims #712 through 719, and 725

John  $^{M}$ arron moved that the Claims be approved upon the approval of the Finance Committee, second by Arthur Petersen, passed by unanimous vote.

The engineering contract authorized October 10 to Williams & Ellis for the survey of costs for improving Thomas Road was presented as approved by Attorney Burton, who added that it also included the entire engineering contract which is proper if they did the original planning. The survey cost is included in full price. John Knudsen moved that approval of the contract for Thomas Road be postponed until next week to allow time to study the contract, second by William Flanigan. A canvass of the vote showed William Schrader, John Knudsen, William Flanigan, John Marron voting "Aye"; Arthur Petersen "Nay." Motion carried by majority vote.

Arthur Petersen moved that the Council, by power of recently signed charter by Governor Fannin, make the recently hired Finance Director, Mr. Charles Tilbrook, be officially appointed Scottsdale's new city treasurer and increase his present salary from \$600 to \$650 per month. The \$50 increase will take effect December 1, 1961. On behalf of Scottsdale's city officials, city employees, and all of the many citizens in our City, we want to thank Mr. Dorothy Ketchum for so graciously giving up part of her official office of City Treasurer and agreeing to devote her full time to City Clerk, as she has done so ably for many years. Congratulations, Dorothy! By appointing Mr. Tilbrook new City Treasurer and Finance Director, he will be able to report directly to the Mayor and Council the financial status of our city at all times. The motion was seconded by John Knudsen, passed by unanimous vote.

Mr. Kimsey announced that the estimated cost of sending a delegate to the Planning and Zoning Conference at Casa Grande would be \$70. Mr. William Arthur and Mr. Jack McMahon of the Planning and Zoning Commission have both expressed a desire to attend. William Flanigan moved that, considering the time the members of this commission put in on their tasks on the board, that two members be authorized to represent Scottsdale at the Casa Grande Planning and Zoning Conference and that they be allowed \$70 expenses, second by William Schrader, passed by unanimous vote.

John Knudsen moved that the salary of Acting City Manager James Smith be increased from \$560 a month to \$650 per month, effective December 1, second by William Flanigan, passed by unanimous vote.

A motion was read by William Flanigan to the effect that it appears, due to the new Scottsdale zoning ordinance, a number of east side residents have become uneasy as to when this Council would annex their area after they petitioned the Council. Due to these inquiries, and the concern of our friends on the east side, he made the following declaration: The City Council will welcome our neighbors on the east side into Scottsdale without further delay upon the



legally valid presentation of annexation petitions representing over 50% of the assessed valuation of that area. We further welcome their efforts in all phases of the city to the purpose of making Scottsdale the best city in Arizona, second by William Schrader, passed by unanimous vote.

John Marron moved that the previously amounced plans of the City Council to commence on December 6 the first hearing on the proposed new zoning ordinance be postponed in order to allow the annexation petitions on the east side be reasonably filed, that the City Council of the Town of Scottsdale assure the east side residents this is being done to guarantee those people two things: 1. They will have a clear voice in what zoning goes into their area upon annexation and 2. They will be entitled and qualified to vote in the first election under the new charter this spring, second by William Schrader, passed by unanimous vote.

- William Flanigan commented on the misunderstanding concerning the garbage landfill. The City of Scottsdale has an agreement with Garbage Service Co. for providing a sanitary landfill to the citizens of Scottsdale and as required by state law. It recently came to the Council's attention that citizens wishing to dump at this site were being charged, which is contrary to our landfill agreement with Garbage Service Co. The residents of Scottsdale who paid this charge will be reimbursed by the Garbage Service Company if they so request and can prove that this request is valid. The citizens of Scottsdale can dump free with the exception of trucks at the site of the landfill, which is located 2 1/2 miles south of McDowedl and 1/2 mile east of Hayden Road. There will be signs plainly marking the site of this landfill.
- Mr. Schrader informed that people going into the area to dump have to pay to cross Hal Adam's property. A receipt should be demanded so that reimbursement may be made by Garbage Service.
- \* Mr. Kimsey stated that this refers to cars and station wagons only, pickups and other trucks will continue to pay.

Art Bateman, parhor owner, and Ted Shumway, attorney, appeared to ask for approval and verification of their plans for the Brownmoor School area which was issued a Use Permit in 1958 for a guest ranch. They were given an interpretive clearance by the Board of Adjustments November 15, 1961, but were denied a building permit on the grounds that the use proposed was not within the use specified three years ago. The project has the approval of the neighbors on all sides, many of whom bought their homes on the understanding that the Brownmoor property would be developed. The existing buildings have been badly damaged by vandals, the area is the scene of nocturnal drinking parties and ahaven for lovers and derelicts. Councilman Petersen stated that this is one of the worst areas in Scottsdale.

Mr. Shumway had a letter from a former Mayor and three members of the 1958 City Council that at the time the Use Permit was granted it was understood that it was to be for the building of a guest ranch, hotels, apartments, hospital, or anything of that sort that is concerned with now, and he had letters from residents approving the tract.

Attorney Burton had investigated everything they have proposed as far as the substantiation of the action of the Board of Adjustments, the feeling of the Council that originally passed and allowed this Use Permit, and it hinges upon an interpretation by the Council of the Use Permit and a willingness to issue a building permit. There is no legal block standing in the way of the Councilmen to deny this either. Speaking for the Council as his client, Mr. Burton stated

that the delays that have been caused in this have not been the fault of the City of Scottsdale since they have been having problems of financing on this property and it has just come before the Council within the last several weeks. The validity of the Use Permit is limited and it is not the same as zoning an area. A Use Permit can be very temporary in nature, and the problem facing the Council now is that the zuning of that area is not the same type of construction as what is proposed. This would be a variance to the zoning of that area, but as Mr. Shumway said, a vote by the Council to allow a building permit to be issued would be legal.

The problems facing the developer are:

- 1/ Committments from FNMA, permanent mortgage financing, and from the Valley Bank, interim financing, terminate Dec. 31., involving a loss between \$40,000 and \$50,000, even if a renewal were granted.
- 2. The field agent for FHA will be in town Dec. 4 and 5, and unless the plans are approved by the engineering department, and a building permit has been issued, the agent cannot act and his services cannot be again obtained until in January. This delay and perhaps an inability to renew the permanent mortgage will cause a direct loss of \$200,000 to \$300,000.

Arthur Petersen moved that the Council instruct the city manager to instruct the engineering department to give these gentlemen the permit they need to build Brownmoor Estates, second by William Flanigan.

William Flanigan did not feel that the Use Permit was a valid use permit for this purpose. Originally it was 24 acres to be used as a guest ranch, and in his opinion, a guest ranch is not a two-story building on eight acres. He would like to have some expression from the people in the area.

Mr. Petersen informed that at the time the Use Permit was given it was school property and could not be zoned. If it had been zoned as commercial at that time, the present owner could have built commercial on the remaining eight acres. If the protest is against the apartments, that is valid; but there is not any reason to turn down the project on the basis of the Use Permit.

It was decided to send out petitions for signatures of the people in the immediate area, and Mr. Schrader moved to table the matter until Thursday at 7:00 PM at a special meeting, second by John Knudsen; a canvass of the votes showed William Flanigan, William Schrader, John Marron, John Knudsen voting "Aye"; Arthur Petersen "Nay." The motion carried.

No further business to come before the meeting, it was adjourned at 10:30 P.M. on motion of Arthur Petersen, second by John Knudsen, passed by unanimous vote.

Respectfully submitted,

Dorothy L. Ketchum

City Clerk

EXHIBIT #28

Minutes of January 16, 1962

The regular meeting of the Mayor and Council of the City of Scottsdale was called to order by Mayor M.E.Kimsey at 8:00 P.M., Tuesday, January 16, 1962 in the Court Room.

Roll Call:

Present: Mayor M.E.Kimsey

Councilmen C.W.Clayton William Flanigan

John Marron Arthur Petersen William Schrader

John Knudsen
Acting City Manager Jim Smith
Attorney Osmond Burton
Clerk Dorothy Ketchum

The minutes of January 9 were approved as corrected in paragraphs 2 and 4 c motion of John Marron, second by C.W.Clayton, passed by unanimous vote.

The following Claims were presented for approval:

General Fund #973 through 977, 988 through 992

Debt Service Fund #103 through 108

Special Assessment Fund #211 through 218

Public Works Fund #32

John Marron moved to approve the claims with the addition of those claims related to Garbage Service Co., designated in the General Fund as #469, 68. 793, 925, 929 and 930 with the provision that the payment of the Garbage Sice Claims be paid on a basis of general retirement to be agreed to within next week and on the further conditional performances by the Garbage Service. that:

111 stipula-

3

- 1. appropriate signs be erected at the intersection of the entranceware to the sanitary land fill and Hayden Road, and at the turnoff at the site proper indicating the exact days and which Sundays that the land fill is o
- 2. a sign will be constructed on the premises within easy view of the citizens using the land fill indicating fees for services not covered by free services rendered passenger cars and station wagons;
- 3. In the event that any new occurrences come about such as the incid of December 31, with which Garbage Service had nothing to do, when a citiz of Scottsdale was shot at, new negotiations will be entered into as to whe or not rectifications will be entered into before payment is made;

second by Arthur Petersen. Mr. Marron informed further that in reference t access road at the landfill, the Council was provided with a copy of the original agreement dated March 28, 1960, in which the property was acquire on a lease basis for the purpose of subletting it to the City of Scottsdal and a copy of a court order dated October 4, 1960 in the Superior Court of Maricopa County restraining the owner of the property from obstructing the and, consequently, the residents of the City of Scottsdale from the use of the dump and granting ingress and egress to the dump. Apparently there is legal problem involved. There is definitely a legal right for the citizens to enter into it and, therefore, the problem some of us had before as to whether or not the Garbage Service Co. had a legal right to enter into a contract and could perform in that they might have been isolated from a public thoroughfare has not been resolved. In addition to those two docum we have also been provided a copy of the actual minute entry in thatlast h ing. If any of the public desires to review that, or the sheriff's report relative to the December 31st occurrence, they are welcome to do so.

Mr. Petersen informed that Garbage Service Co. has signs leading into the landfill and that they have been there for some time, but it does not say that it is closed on Sunday.

Mr. Schrader informed that he was on the Council when the agreement was approved. The City Manager was authorized to enter into the agreement at \$2000 per month, of which Maricopa County was to pay \$1200 per month, the City \$800. The \$2000 seemed high, but as the County was going to pay \$1200 per month, it was a just contract. A letter from Maricopa County stated that in the future the Board Of Supervisors is still willing to negotiate with the City for a joint sanitary landfill in the Scottsdale area. However, the financial obligation must be based on a justifiable evaluation of service being rendered to the people living within and without the incorporated area Scottsdale will not have to bear the whole burden. He would like to instruct the Acting City Manager to send a contract from the City Attorney to the County Attorney, which will go through Dr. Farnsworth and Weinsteins office as to what they feel their proportionate share of this program should be, and return to us so that it can be signed.

The motion passed by a unanimous vote.

; precinct

Arthur Petersen moved that the City Manager prepare a resolution that would add three more voting places in addition to the two the City already has, on being the Court Room and the other the Ho Ho Kum School; the 3 to be adverte at a later date, as soon as the city contacts the Scottsdale School Districtor find out which schools are available and that are located geographically right for the election, second by C.W.Clayton.

A request was made by Mr. Searles and others for at least 10 voting places, and for the names of the candidates to be rotated on the voting machines.

John Marron moved to amend the motion to provide that at the close of registration next Saturday, the Council re-evaluate the number of additional poliplaces and provide for additional ones in the event the registration warrant, second by William Schrader, passed by unanimous vote. The original vote passed by a unanimous vote.

ack Estates problem Mrs. S. Dean Parry, 5036 Orange Blossom Place, spokesman for a large group of homeowners from Camelback Estates who claim that the City hadn't lived up to promises made them by Mr. McNutt of what improvements would be made to the streets in their subdivision if they signed petitions to be annexed to the cappeared before the Council to question if the street improvements were going to be made.

Engineer McDonald was not aware of any promises made by Mr. McNutt, but the street work in that area was not scheduled to be done as they had never been accepted by the County, for they were considered substandard and Mr. McDonal did not think that these streets could be repaired adequately outside of an improvement district.

Mr. Burton informed that this area is subject to litigation at the present time and, if requested, would have an opinion as to the legality and the process of deannexation for next week's meeting. Mr. McDonald will have a complete report of the street problem for the next Council meeting.

bowl-Downey
.ng

WONDERBOWL-DOWNEY presented a request for the rezoning of that certain real property in the City of Scottsdale located at the NW corner of Scottsdale at McDowell Roads, the same being more particularly described as follows:

Parcel 1: The SEX, Sec 34, EXCEPT the N 100' of the W 920' and the W 100' of the N 1020'

from COUNTY R-1 and C-3 to COMMERCIAL "A".

of the Planning and Zoning with the addition to Item 3 that the apartments "be completed at the same time or sooner;" and with the addition of 5. that under no circumstances will the R-B area be used as parking for the commercial area; 6. that shopping center traffic shall not be allowed on Palm Lar or 70th Street residential areas; second by William Flanigan.

Mr. Marron informed that 1. This Council, under no possible circumstance, a constituted, will be here 90 days from now; 2: The Council has no direct control over the issuance of the building permits except in so far that the person issuing the building permits works for the Council. We don't see the unless somebody backs up on it; 3. He did not feel that the promise to file a zoning request, although no doubt it will be honored, for a later modific tion for shopping center zoning is worth anything. We are going to rely so. on control of the building permit or forget it. It is made with good intent and doubtlessly will be honored, but no one here tonight should rest assure that because that step is taken, the homeowners there are protected; 4. The is a misunderstanding as to the function of our Architectural Board. This Board deals with the western architecture and is not an issue down there as is downtown. We will not attempt to regulate the aesthetics of the architec ture of this building.

Mr. Plunkett said that the Architectural Board and the Council should be able to look at the drawings for assurance that a building to the credit of Scottsdale would be built there. Mr. Schrader informed that all building perspectives are in the province of the Architectural Board.

The motion capried by a unanimous vote.

de Palms Final

PLAZA DE PALMS FINAL PLAT, SW corner of Camelback and Miller Roads, a subd: vision of a portion of the NEZ, NEZ, SWZ, Section 23, T2N, R4E, G&SRB&M, Pl Title and Trust, represented by Fenton McDonough, was approved and the requested changes of October 10 were met at Planning and Zoning meeting of January 8. Mr. McDonough informed that there may be some confusion in the background of the plat. When it appeared as a tentative plat before Plann: and Zoning and the Council certain recommendations were made. At that time Collar, Williams & White, Eng., working in conjunction with Ken McDonald, went over the plat and complied with all specifications. There was one low in which a building permit will not be issued, which has the 8' alley next it. All the recommendations of the Council and of Planning and Zoning have been complied with. The recommendations for a 20' alley in commercial are not a requirement at the time of approval of the plat. He informed that 20 alleys are not necessary here and a good portion of the alleys are adjacent to public parking areas, and the corners have been cut off when they change directions; it conforms to the pattern set in the whole corner section. Recommend allowance of 8' alley in this case.

Ken McDonald wished the record to show that before the Mayor signs the plan that a letter should be submitted from the owners of the property at the NI corner dedicating an 8' alley. They have informed that they would do this, but he would like to see the letter. In addition, there is an existing ser line that crosses some of those lots; they should also write that they will abandon this and provide new sewers for the lots.

John Knudsen moved that Plaza de Palms Final Plat be approved upon the rece by the city of a letter from the owners of the property on the NW corner tl they will dedicate an 8' alley and another letter from the owners of Plaza Palm abandoning the existing sewer line, second by William Schrader, passed by unanimous vote.

SCOTTSDALE HIGHLANDS 6 TENTATIVE PLAT, south of Camelback, 1/8 mile W of P:

dale Hilands 6 :ive

Parcel 2: The EXCEPTION, the N 100' of the W 920' and the W 100' of the N 1020' of the SE\(\frac{1}{2}\), SE\(\frac{1}{2}\), Sec 34, T2N, R4E

form COUNTY R-1 and C-3 to RESIDENTIAL "B".

The Planning and Zoning Commission approved the rezoning with the following recommendations at their meeting of December 27, 1961:

- 1. That when the new zoning ordinance for the City of Scottsdale is approved, Parcel 1 shall revert to C-S, Shopping Center; Parcel 2 shall revert to R-5
  - 2. That the parking area directly east of the 151,000 sq ft shopping center have planting area to break up blacktop.
  - 3. That all of the apartment houses be started at the same time as the 151,000 sq ft building.
- 4. That the necessary r/w, if not already dedicated, be dedicated according to needs described by the engineering department.

The citizens of the area, represented by Mr. Lee Plunkett, 6917 E Granada, presented their views of the proposed development. Though they still feel that there is ample commercial property already designated within the Scottsdale area; it is realized that there is pressure and possibly a need for this to be developed commercial but that:

- 1. It is the duty of the Council to establish zoning with regard to the benefits derived therefrom for the entire town of Scottsdale, as well as the immediate residential area.
- 2. The type of business established on this area be of a desirable nature; that the health and welfare of the area residents be assured.
- 3. The architectural development should be of a type benefitting all of Scottsdale.
- 4. A suitable buffer strip composed of apartments be placed on 70th and Palm Lane of a type to be of credit to Scottsdale.
- 5. Construction of the apartments will be coincidal with the commerce construction and completion to be at the same time.
- 6. Ingress and egress from the shopping center should not be allowed on 70th and/or Palm Lane.

Attorney John Savoy, representing Wonderbowl-Downey Inc, informed that his firm had acceded to all the recommendations of the Planning and Zoning Commission and a letter of commitment had been sent to Attorney Burton. "In order to assure the residents of the area bounding the 40 acre parcel on INW corner of Scottsdale and McDowell Road that the development of that triby Wonderbowl-Downey will progress as though it were zoned under a planner shopping center and according to your proposed planning and zoning ordinate W-D has agreed to file with the City of Scottsdale Planning and Zoning Commission a petition to rezone the 40-acre parcel to C-S zoning upon pass of the zoning ordinance and, further, that the request for rezoning, pursito the new ordinance, shall be irrevocable."

John Knudsen moved that the rezoning be approved with the recommendations

of the Planning and Zoning with the addition to Item 3 that the apartments "be completed at the same time or sooner;" and with the addition of 5. that under no circumstances will the R-B area be used as parking for the commercial area; 6. that shopping center traffic shall not be allowed on Palm Lane or 70th Street residential areas; second by William Flanigan.

Mr. Marron informed that 1. This Council, under no possible circumstance, as constituted, will be here 90 days from now; 2. The Council has no direct control over the issuance of the building permits except in so far that the person issuing the building permits works for the Council. We don't see them unless somebody backs up on it; 3. He did not feel that the promise to file a zoning request, although no doubt it will be honored, for a later modification for shopping center zoning is worth anything. We are going to rely solely on control of the building permit or forget it. It is made with good intentions and doubtlessly will be honored, but no one here tonight should rest assured that because that step is taken, the homeowners there are protected; 4. There is a misunderstanding as to the function of our Architectural Board. This Board deals with the western architecture and is not an issue down there as it is downtown. We will not attempt to regulate the aesthetics of the architecture of this building.

Mr. Plunkett said that the Architectural Board and the Council should be able to look at the drawings for assurance that a building to the credit of Scottsdale would be built there. Mr. Schrader informed that all building perspectives are in the province of the Architectural Board.

The motion carried by a unanimous vote.

'alms Final

PLAZA DE PALMS FINAL PLAT, SW corner of Camelback and Miller Roads, a subdivision of a portion of the NEZ, NEZ, SWZ, Section 23, T2N, R4E, G&SRB&M, Phoen: Title and Trust, represented by Fenton McDonough, was approved and the requested changes of October 10 were met at Planning and Zoning meeting of January 8. Mr. McDonough informed that there may be some confusion in the background of the plat. When it appeared as a tentative plat before Planning and Zoning and the Council certain recommendations were made. At that time, Collar, Williams & White, Eng., working in conjunction with Ken McDonald, went over the plat and complied with all specifications. There was one lot in which a building permit will not be issued, which has the 8' alley next to it. All the recommendations of the Council and of Planning and Zoning have been complied with. 'The recommendations for a 20' alley in commercial area not a requirement at the time of approval of the plat. He informed that 20' alleys are not necessary here and a good portion of the alleys are adjacent to public parking areas, and the corners have been cut off when they change directions; it conforms to the pattern set in the whole corner section. Recommend allowance of 8' alley in this case.

Ken McDonald wished the record to show that before the Mayor signs the plat, that a letter should be submitted from the owners of the property at the NW corner dedicating an 8' alley. They have informed that they would do this, but he would like to see the letter. In addition, there is an existing sewer line that crosses some of those lots; they should also write that they will abandon this and provide new sewers for the lots.

John Knudsen moved that Plaza de Palms Final Plat be approved upon the receipt by the city of a letter from the owners of the property on the NW corner that they will dedicate an 8' alley and another letter from the owners of Plaza de Palm abandoning the existing sewer line, second by William Schrader, passed by unanimous vote:

e Hilands 6 SCOTTSDALE HIGHLANDS 6 TENTATIVE PLAT, south of Camelback, 1/8 mile W of Pima

a subdivision of a portion of the SEX, Sec 24, T2N, R4E, Bixby Construction was approved by Planning and Zoning January 8 with the suggestion that the Council check with Mr. Bixby relative to future park areas.

John Marron moved to table the plat for a week for re-referral to the P & F Board for consideration on the basis of the total acreage owned by the app1 cant, second by John Knudsen, passed by unanimous vote.

e Grove 17-A

VILLAGE GROVE 17-A FINAL PLAT, N of Thomas, 4 miles E of Hayden, a subdivis of the Ez, Wz, SEz, SWz EXCEPT the S 330', Sec 25, T2N, R4E, Union Title Co was approved by Planning and Zoning January 8 as requested corrections had been met. Arthur Petersen moved to approve Village Grove 17-A, second by C.W.Clayton, passed by unanimous vote.

re Palms Final

WOODMERE PALMS FINAL PLAT, (formerly Patio House Tract) W of and adjacent t the Arizona Canal and N of the Paradise Village subdivision NE of the Execu tive House, a subdivision of a portion of the SEt, SWt, Sec 14, T2N, R4E, Phoenix Title and Trust, was approved by Planning and Zoning January 8. Wil Schrader moved to approve the plat, second by Arthur Petersen, passed by unanimous vote.

West 4 Tentative

TRAIL WEST 3 TENTATIVE PLAT, 1/3 mile N of Thomas,  $\frac{1}{4}$  mile E of Hayden, a st division of a portion of NW $\frac{1}{4}$ , of the SW $\frac{1}{4}$ , Sec 25, T2N, R4E, Western Builden was approved January 8 by Planning and Zoning. Arthur Petersen moved to approve on the basis of the Planning and Zoning recommendations that the drainage problem be remedied before final plat is approved, second by Will: Schrader, passed by unanimous vote.

AcDowell Imp Dist Sidney Loofborough, 8134 E Palo Verde, represented a petition requesting at improvement district in Park McDowell, which had been initiated in Septembe 1961 but dropped because of the deannexation of the east side, appeared to have the plan reactivated. He was informed that the awarding of the engine ing contract would be on next Monday's agenda.

Depart. Appeal

Mr. Burton requested that an appeal board be formed for the building deparment to relieve that agency of the responsibility of ruling on variations ( the building code. He will prepare an ordinance creating such a board.

Report

Heinrich J. Thiele, consulting hydrologist, presented a brief resume of his survey of the water resources, present and potential, in the Scottsdale are

Manager meeting

There was a discussion as to a time for a meeting to go over the application for City Manager, and it was arranged for Friday.

No further business to come before the Council, the meeting was adjourned at 11:45 P.M. on motion of Arthur Petersen, second by John Marron, passed by unanimous vote.

Respectfully submitted,

Dorothy 1. Ketchum,

City Clerk

**EXHIBIT #29** 

Minutes of January 30, 1962

A special meeting of the Mayor and Council of the City of Scottsdale was called to order by Mayor M.E.Kimsey at 8:00 P.M. Tuesday, January 30, 1962 in the Court Room.

Roll Call:

Present: Mayor M.E. Kimsey

Councilmen William Flanigan John Marron
John Knudsen C.W.Clayton
William Schrader Arthur Petersen

Acting City Manager Jim Smith Attorney Osmond Burton Clerk Dorothy Ketchum

The minutes of January 16 were approved with corrections on pages 4 and 5 on motion of William Flanigan, second by William Schrader, passed unanimously. are, we'll a go good to

The following Claims were presented for approval:

General Fund #1018, 1019, 1020 Special Assessment Fund #222, 223, 224 Debt Service Fund #114 and 115;

William Flanigan moved that the above claims be approved subject to the approval of the Finance Committee, second by C.W.Clayton, passed unanimously.

Mr. Flanigan informed that some of the stipulations of the minutes of January 16 to be fulfilled by Garbage Service Co. at the landfill have not been followed. The sign there does not state which Sunday the landfill is open, nor the fees charged for other than passenger cars and station wagons. The City Manager was instructed to bring this to the Garbage Company's attention.

The original liquor license, Series 10, State 1921, for John A Gillett, (Circle and the original liquor license, Series 16, State 2670, for L.P.Restaurant, Inc. (Lucky Pierre) was approved by the Council on motion of John Marron, second by Arthur Petersen, passed by unanimous vote.

The redeposit of Time Certificate bond monies was tabled for one week on motion of John Marron, second by Arthur Petersen, passed by unanimous vote.

The reading of the Library Ordinance was tabled for one week on motion of John Marron, second by Arthur Petersen, passed by unanimous vote.

ORDINANCE NO. 138, AN ORDINANCE FOR THE PURPOSE OF CREATING, PROVIDING FOR THE APPOINTMENT, AND SETTING FORTH THE POWERS AND DUTIES OF A ZONING COM-MISSION; PROVIDING FOR THE AMENDMENT AND SEVERABILITY THEREOF: AND DECLAR-ING AN EMERGENCY, was read in full by Attorney Burton. On motion of John Knudsen, second by C.W.Clayton, passed by unanimous vote, Ordinance 138 was read the second and third time by title only.

John Knudsen moved and William Flanigan seconded to adopt Ordinance 138. John Knudsen moved to amend his motion that para. d, page 3 should be rewritten to delete the words "area of"; second by William Flanigan, passed by unanimous vote.

A canvass of the vote showed William Flanigan, John Knudsen, William Schrader,

om.

A public hearing was held for the following:

The rezoning of that certain real property in the city of Scottsdale lo on the NW corner of Camelback Road and 70th St; the same being more par larly described as follows:

The easterly 100' of Lot 5, Arcadia Vista, Unit 4, a subdivision of the SW1, NE1, Section 22, T2N, R4E, G&SRB&M

from COUNTY R-5 D2 to City of Scottsdale COMMERCIAL A zoning, was approby Planning and Zoning January 8, 1962 with the exception that the r/w deeded if it has not already been deeded at the present time.

Haze Burch represented Mr. Orlandi, owner. He informed that the r/w had deeded along Camelback, and if additional r/w is needed, the client wil cate it; that the proposed First Federal Savings will have two entrances from Camelback and one fronting on Fashion Square. A map showing the arrobe developed was attached to the request for zoning petition. It is plan have 70th Street as a private street between Fashion Square and the Orlaproperty. Engineer McDonald informed that the City would want 70th Street to be 60' wide, and his department had had no opportunity to review the

William Flanigan moved to table until next week until more complete infi and a plat plan was offered the Council, second by William Schrader, par by unanimous vote.

RESOLUTION NO. 184, A RESOLUTION APPOINTING RESIDENTS OF THE CITY OF SCONDALE TO ACT AS A BOARD OF APPEALS FOR THE CITY BUILDING DEPARTMENT; AND CLARING AN EMERGENCY was tabled on motion of John Knudsen, second by Willenigan, passed by unanimous vote until the Council could meet and inteview the gentlemen who would serve on the Board of Appeals.

RESOLUTION NO. 185, A RESOLUTION OF THE MAYOR AND COUNCIL OF THE CITY OF SCOTTSDALE, MARICOPA COUNTY, ARIZONA; APPOINTING THE INSPECTORS, JUDGES CLERKS AND MARSHALS; FIXING THEIR COMPENSATION; DESIGNATING THE POLLING PLACES FOR THE HOLDING OF THE PRIMARY ELECTION OF THE CITY OF SCOTTSDALF FOR THE PURPOSE OF VOTING FOR CANDIDATES TO BE NOMINATED OR ELECTED TO SERVE AS MAYOR AND MEMBERS OF THE COUNCIL FOR THE CITY OF SCOTTSDALE, rein full by Attorney Burton at the forepart of the meeting, was tabled for later in the meeting on motion of John Marron, second by Arthur Peterser passed by unanimous vote.

Dorothy Ketchum reported that the members of the election boards were fr a list furnished by Mr. Erhardt of the County Election Board of those whad worked on county elections.

For the record, Mr. Marron felt that the city should be divided into precincts because of the litigation concerning the north side annexation. I it were to be declared invalid, the votes cast from this district could discounted. Mr. Flanigan informed that if this area was designated as on precinct, there would be no polling place in this precinct.

Mr. Schrader moved that, since this area is considered in the area of Scottsdale and to make it fair for all concerned that one precinct be designated with five polling places, second by Arthur Petersen, passed by unanimous vote.

On motion of John Knudsen, second by Arthur Petersen, passed by unanimou vote, Resolution 185 was read the second and third time by title only. Resolution 185 was passed and adopted on motion of William Schrader, sec

Children" signs in various parts of the city. It was suggested that they be near schools on arterial roads and that they should be cleared through the Board of Adjustments.

y sign

John Knudsen reported that a plant nursery on McDowell Road and 68th St had a large cardboard sign which is not in accordance with the Sign Ordinance.

of

Lute Wasbotten thanked the Council by letter for a certificate of merit for his services to the City.

William Schrader moved to accept with regret the resignation of Jim Dow from the Planning and Zoning Commission because he now resides outside the city limits, second by Arthur Petersen, passed by unanimous vote. John Knudsen requested that a certificate of merit be sent Mr. Dow.

11

The Jack Denore Productions, Inc. of Hollywood requested permission for the American Tobacco Co. to film a TV commercial in Scottsdale, and which would also involve photos of Buster Shaver, deputy marshal. The Council agreed that such an undertaking would be acceptable.

is for

John Marron moved to authorize the city manager to call for bids for future legal advertising for the city, second by John Knudsen, passed by unanimous vote. Mr. Flanigan commented that calls for bids for things of this nature is mandatory under the City Charter, and is also good policy.

aceipts

Concerning the matter of obtaining a greater share of the sales tax receipfrom the state because of Scottsdale's increased population since the last federal census, Mr. Marron quoted from State Statute 42-1431: " The State Treasurer shall pay 25% of the tax collected under this article to the var: municipalities of the state to be used by the municipality for any municipality purpose, and to be distributed in proportion to the population as shown by last federal decennial census. Any municipality during the 5th year follow: the decennial census may cuase to be taken by the U.S. Census Bureau a spec: census of the population within the municipal limits. The results of such special census may be certified by the state tax commission commencing on July 1 in the 6th year following the last federal decennial census. Such special census shall be used as the basis of apportionment of the taxes collected under this article in determining the amount payable to such mun: cipality until the federal decennial census." The City, therefore, cannot spend \$1200 for a new census, as has been suggested, to realize a larger apportionment of the tax money from the state until 1965.

Mr. Searles informed that Mr. Wilmer of the Bureau of Census had told him that one could be made, confirmed by the Executive Secretary of the State Tax Commission, and if the census was made, the tax would be adjusted on that hasis. Mr. Smith commented that if Scottsdale did this, then the other cities in the state would also have the right to do this, and thus the new census 'would be to no avail. A census has been taken and the results are expected this week. Mr. Flanigan suggested that the city attorney research the problem and give a concrete answer.

No further business to come before the Council, the meeting was adjourned a 10:15 P.M. on motion of John Marron, second by Arthur Petersen, passed by unanimous vote.

Respectfully submitted,

Dorothy I Ketchum, City Clerk

EXHIBIT #30

Minutes of February 13, 1962

A special meeting of the Council and Mayor of the City of Scottsdale was called to order by Mayor M.E.Kimsey at 8:00 PM, Tuesday, February 13, 1962 in the Court Room.

Roll Call:

Present: Mayor M.E.Kimsey

Mayor M.E.Kimsey

Councilmen William Flanigan

John Marron

John Knudsen C.W.Clayton
William Schrader Arthur Petersen

Acting City Manager James Smith

Attorney Osmond Burton Clerk Dorothy Ketchum

The minutes of December 28 were approved as corrected in the second paragraph on motion of William Schrader, second by Arthur Petersen, passed unanimously.

The minutes of February 6 were approved on motion of William Flanigan, second by C.W.Clayton, passed by unanimous vote.

The following Claims were presented for approval!

General Fund #951 through 959, 1056 through 2038 Public Works Fund #36 Construction Fund #54 Sewer Revenue #96 Debt Service Fund #118

It was requested of Mr. Burton to have the Scottsdale and Garbage Service oral agreement concerning the signs to be erected at the land fill to be incorporated into the contract between Garbage Service and the city.

John Knudsen moved to approve the Claims subject to the approval of the Finance Committee, second by William Flanigan, passed by unanimous vote.

The following bids were presented for legal advertising:

Arizona Weekly Gazette

Scottsdale Progress \$1.56 per column inch per insertion

.70 per column inch 1st insertion .35 per column inch for each sub-

sequent insertion thereof.

Mr. Burton informed that the Arizona Weekly Gazette had been certified as a newspaper of general circulation in all the counties and cities of Arizona.

William Flanigan moved that the low bid of the Afizona Weekly Gazette at a .70 per inch for the first advertisement and a .35 per inch of each additional advertisement for a 12-month period commencing March 1, 1962 be accepted, second by John Knudsen.

Mr. Marron informed that last year from December to December, the city had 14,685 inches of advertising with the Scottsdale Progress at a rate of \$1.16 per inch for a total of \$17,034.60. The same number of inches in the Arizona Weekly Gazette at .70 per inch would have been \$10,279.50, a difference of \$6,755.10.

Attorney Burton added that the State Statutes provides that where a weekly

that in most instances where there is legal advertising printed, it will only be published once. Mrs. Ketchum informed that by using a weekly newspaper. certain hearings may be delayed.

William Schrader moved that the motion be tabled until the next meeting to giv the attorney an opportunity to draw up a contract, second by C. W. Clayton, passed by unanimous vote.

Mr. Marron referred to the picture published in the Scottsdale Progress last ture week that included a member of the local cleric which implied that he was endorsing a certain candidate. A letter from the cleric to the editor on page 4 of the February 13 edition denied this, as the picture was taken without his knowledge or consent. Mr. Marron regretted that demagoguery had crept into the present political campaign.

RESOLUTION NO. 188, A RESOLUTION APPOINTING RESIDENTS OF THE CITY OF SCOTTS-DALE TO ACT AS A ZONING COMMISSION, AND DECLARING AN EMERGENCY was read in ful by Attorney Burton on motion of C.W.Clayton, second by Arthur Petersen, passed by unanimous vote. On motion of C.W.Clayton, second by John Knudsen, passed by unanimous vote, Resolution 188 was read by title only for the second and third time. Thereupon, Resolution 188 was passed and adopted upon motion of

William Schrader, second by William Flanigan, passed by unanimous vote.

RESOLUTION NO. 189, A RESOLUTION APPOINTING RESIDENTS OF THE CITY OF SCOTTS-DALE TO ACT AS A BOARD OF APPEALS FOR THE CITY BUILDING DEPARTMENT; AND DE-CLARING AN EMERGENCY was read in full by Attorney Burton on motion of William Schrader, second by Arthur Petersen, passed by unanimous vote. On motion of John Knudsen, second by William Flanigan, passed by unanimous vote, Resolution No. 189 was read by number and title only for the second and third time. Thereupon, Resolution No. 189 was passed and adopted on motion of C.W.Clayton, second by Arthur Petersen, passed by unanimous vote.

The Council noted that city sales tax would not be charged in relation to the 110 distribution of the polio vaccine in the Scottsdale area through a local drugs

Jim Smith requested a motion by the Council to approve teen-age Saturday night s' Club dances at the Boys' Club under the auspices of Mr. Nixon and Mr. Evans.

> Mr. Jack Nixon informed that Roy Ciappini of the Boys' Club would sponsor the dances if it was necessary. It is planned to hire off-duty policemen and chaperones to keep order at the dances, and the hours would be 8:30 to midnigh Arthur Petersen moved to allow Tony Evans and Jack Nixon to conduct dances at the Boys' Club starting February 24 under the sponsorship of Roy Ciappini, second by William Schrader, passed by unanimous vote.

> Chief Chafey wished to clarify any misleading ideas about the police departmen being able to give proper police service to the City of Scottsdale. Since the coming of the tourists and the annexation of the east side, the work load has increased tremendously, but the department has not failed to answer any call received, nor will it in the future. To offset the busy season, the cooperativ service of the Sheriff's office and of the Marshal's Posse will be employed. A year ago the personnel totaled 18 and today it is 31, plus an increase of 4autos and 2 motorcycles. The department has the finest equipment of any in the state, and no other city has the radio equipment that Scottsdale has.

> Mr. Petersen suggested that periodic reports be made to the manager by the Chief of the number of calls made so that if there is a too great increase in them, the Manager and Council will be aware of the need for added personnel and facilities.

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set up under the engineering department. Mr. Smith informed that the City does not need a full-time traffic engineer, and that it would be more practical to retain one on a contractual basis as a specific project.

Mr. Schrader informed that some of the candidates for office have some signs in some very prime locations where we need some traffic lights and traffic control. They should look into our engineering department and they would fin that we presently have a light in the street department yard to be installed at Indian School and Miller, and we have already included in the budget light at Indian School and Hayden Roads; and the county will install lights at Indian School and Monte Vista as soon as Indian School is widened.

No further business to come before the Council, the meeting was adjourned at 9:10 on motion of William Flanigan, second by John Knudsen, passed by unanimous vote.

Respectfully submitted,

**EXHIBIT #31** 

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### INDEXED

Jul-27-52 6 5 1 2 - 7 (% -1 )

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA
IN AND FOR THE COUNTY OF MARICOPA

GARBAGE SERVICE COMPANY, a corporation;

Plaintiff,

140548

CITY OF SCOTTSDALE, a municipal corporation,

Defendant.

COMPLAINT

6.4

### FIRST CAUSE OF ACTION

Plaintiff for its cause of action against defendant alleges:

I.

That plaintiff, Carbage Service Company, is a corporation duly organized and existing. That defendant, City of Scottsdale, is a municipal corporation duly organized and existing under the laws of the State of Arizona.

II.

That heretofore and on or about the 1st day of May, 1961, plaintiff and defendant entered into an agreement in writing wherein and whereby it was provided, among other things, that the plaintiff would furnish dump area within three miles of the city limits of Scottsdale, Arizona, together with all labor and supervision necessary for operating thereon a sanitary land fill service in accordance with certain minimum requirements specified in said agreement which would be used for the convenience of the residents of the City of Scottsdale. That in consideration for the furnishing of said dump area and the labor and supervision necessary for the operation of the sanitary land fill

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service thereon, defendant agreed to pay to plaintiff the sum of Two Thousand Dollars (\$2,000.00) per month on the loth day of each and every month, commencing May 10, 1961, such payment to be made in the customary and usual manner for payment of the defendant's obligations.

III.

That the plaintiff has duly performed all of the terms, covenants and conditions of said agreement on its part to be kept and performed; that the defendant has paid all sums due plaintiff up to and including the month of April of 1962, but for some inexplicable reason has now wrongfully failed, neglected and refused to pay to the plaintiff the sum of \$2,000.00 for each of the months of May and June of 1962, although proper claim has been made therefor, and there is now due and owing to plaintiff from defendant under and pursuant to the terms of said agreement the sum of Four Thousand Dollars (\$4,000.00).

WHEREFORE, plaintiff prays for judgment against defendant on this, its First Cause of Action, in the amount of \$4,000.00, together with interest at the rate of six per cent (6%) per annum on each installment of Two Thousand Dollars (\$2,000.00) from the date the same became due until paid, together with its costs and disbursements incurred by reason of this action.

### SECOND CAUSE OF ACTION

I,

Plaintiff adopts and reaffirms the allegations contained in Paragraph I of its First Cause of Action.

II.

That heretofore and on or about the lat day of May, 1961, the plaintiff and defendant made and entered

into a certain agreement in writing wherein and whereby it was provided, among other things, that plaintiff would provide defendant and its residential and commercial establishments with a garbage and trash collection service of parbage and refuse in the manner and at the rates therein specified to all residents of the City of Scottadale as it then existed, together with all areas thereafter annexed by defendant. That it was further provided in said agreement that the company would make claim against defendant at the end of each month for all services performed thereunder and that defendant would pay such claim on or before the 10th day of the succeeding month.

III.

That the plaintiff has duly performed all of the terms and conditions of the agreement on its part to be kept and performed and during each and every month that the said contract has been in effect has performed garbage and trash collection service for residential and commercial units within all areas encompassed by the agreement at the special instance and request of the defendant; that the defendant has paid plaintiff in full for the services so rendered by it for all months of 1961 and the months of January and April of 1962; that defendant owes plaintiff the sum of Six Thousand Five Hundred Minety-nine and 98/100ths Dollars (\$6,599.98), representing the balance due plaintiff after partial payment by defendant for plaintiff's services rendered during the month of February of 1962; that defendant owed plaintiff the sum of Nine Thousand Three Hundred Sixty-one and 48/100ths Dollars (\$9,361.48), representing the balance due plaintiff after partial payment by defendant for daintiff's services rendered during the month of March of 1962; that defendant owes plaintiff

the sum of Twenty-nine Thousand Four Hundred Six and 95/100ths
Dollars (\$29,406.95), representing the sum due plaintiff for
plaintiff's services rendered during the month of May of 1962;
and the further sum of Thirty Thousand Nine Hundred Twenty-seven
and 64/100ths Dollars (\$30,927.64) for services rendered to
defendant for the month of June of 1962; that defendant also
owes plaintiff the sum of One Thousand Eight Hundred Eightythree and 36/100ths Dollars (\$1,883.36), representing collection accounts for new starts and adjustments during the
months of February, March, April and May of 1962. That
plaintiff has made proper claim to the defendant, describing and showing the services so performed in all such areas for said months
but the defendant has wrongfully failed, neglected and refused
to pay the same.

That for the protection of the health, welfare and safety of the citizens of Scottsdale, plaintiff has continued to provide to them all of the services described in said agreement notwithstanding defendant's wrongful refusal to pay therefor.

WHEREFORE, plaintiff prays judgment against the defendant on this, its second Cause of Action, in the amount of \$79,199.33, together with interest at the rate of six per cent per annum on each month's delinquencies, until paid, together with its costs and disbursements incurred by reason of this action.

MIDINE & SORENSON

Attorneys for Plaintil 609 Luhrs Building Phoenix 3, Arizona

# EXHIBIT #32

### **EXHIBIT 32**

### **RESPONSE TO RFI QUESTION #18**

Persons assisting in the preparation of answers to this RFI are as follows:

Pete Chavez, Director Solid Waste Management Municipal Services Department 9191 E. San Salvador Scottsdale, Arizona 85258 480-312-5600 Question #s 9, 10

Claude Crosier, Superintendent Sanitation Department (1964-1986) P.O. Box 2334 Pinetop, Arizona 85935 520-367-5968 Question #s 9, 10

Bob Dressel Equipment Superintendent (1965-1982) 11439 N. 65<sup>th</sup> Street Scottsdale, Arizona 85254 480-948-3514 Question #s 4,6,8

Patrick Neal Inspection Services Manager (1968-1993) East County Road Cave Creek, Arizona 85331 480-595-999 Question #s 4,8,11 Bea Christ
Deputy City Clerk
3939 Drinkwater Blvd.
Scottsdale, Arizona 85251
480-312-2411
Question #4

Bud Deal, Driver Sanitation Department (1963-1992) c/o City of Scottsdale 9191 E. San Salvador Scottsdale, Arizona 85258 Question #s 9, 10

John Golden Director, Fleet Management 9191 E. San Salvador Scottsdale, Arizona 85258 480-312-5575 Question #4

Rick Pence, Manager Solid Waste Management Municipal Services Department 9191 E. San Salvador Scottsdale, Arizona 85258 480-312-5600 Question #s 9, 10 Marc Stragier
Public Works Director
(1963-1974)
8201 E. Monterey Way
Scottsdale, Arizona 85251
602-437-3113
Question #s 4,6,8

Bill Sturgill
Landscape Coordinator
Community Maintenance
3839 N. Drinkwater Blvd. Ste. 100
Scottsdale, Arizona 85251
480-312-4410
Question #s 4,6

EXHIBIT #33



March 29, 1979

Mr. Grover Serenbetz Public Works Director City of Tempe 31 East 5th Street Tempe, Arizona 85281

Dear Grover:

We met today with David Easchief of the Salt River Community for the first discussion of parameters for the proposed study of the landfill as we tentatively agreed to several months ago.

Attached is a copy for your review.

Please make comments, suggestions and additions as you see fit, and advise either David or myself of the changes you desire.

I will keep you posted as we progress on this important matter.

Also, David requested that Tempe resubmit their tonnage projections through the year 2000 since he does not recall receiving them.

Very truly yours,

Carl Darden

Carl B. Darden Field Operations Department Head

CBD:jm

Enc. (1)

# TENTATIVE PARAMETERS OF PROPOSED LANDFILL STUDY

- I. Determine generation rate from 1980 2000 from the various participants in the landfill; i.e., Salt River Community, Scottsdale, Tempe, Mesa, Paradise Valley, Fountain Hills, et al.
- II. Project life of existing site under present conditions.
- III. Determine life of existing site utilizing various levels of recycling.
  - IV. Determine alternatives to extending life of existing site or acquiring additional sites.
  - V. Determine impact of present and proposed Federal and State regulations.
  - VI. Estimate cost of various levels of recycling, other alternatives for extending life and complying with regulations.

SOLID WASTES (in tons)

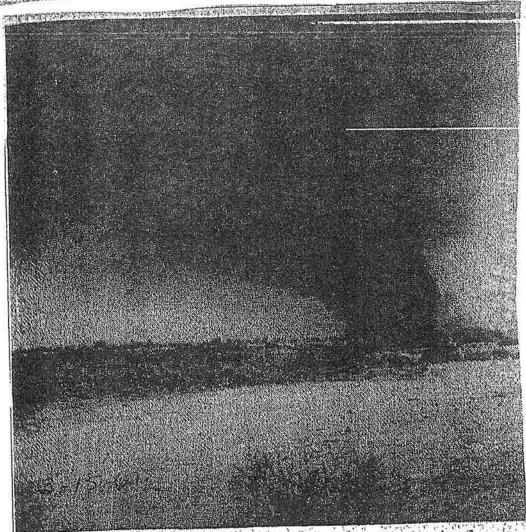
# YEAR

				F4 27	
2000	134,300 $104,900$ $239,200$	78,200 58,700 136,900	101,800 77,700 179,500	314,300 241,300 555,600	1,520
1995	118,900 92,800 211,700	71,700 53,800 125,500	92,700 68,200 160,900	283,300 214,800 498,100	1,365
1990	111,100 83,000 194,100	67,000 46,300 113,300	84,700 62,300 147,000	262,800 191,600 454,400	1,245
1985	99,500 72,400 171,900	61,800 41,500 103,300	78,800 58,000 136,800	240,100 171,900 412,000	1,130
1980	91,700 66,000 157,700	54,900 36,800 91,700	63,100 45,300 108,400	209,700 148,100 357,800	086
1975	66,200 36,600 102,800	44,200 29,000 73,200	53,200 33,000 86,200	163,600 98,600 262,200	720
	MESA Residential Commercial Total	SCOTTSDALE Residential Commercial Total	TEMPE Residential Commercial Total	COMBINED Resdiential Commercial Total	Tons/Day (365 days per year)

# COMPARISON OF ALTERNATIVE SITES

SITE NO. 5	So. of Salt River at the terminus of Dobson Road near boundaries of the Cities of Mesa & Tempe.	Presently used as a park near a sewage disposal plant.	12 acres	₩ <sub>1</sub>	RedimixCity of Mesa	Water, electricty, sewer.	12.0 m1. 25.5 m1. 14.5 m1.
SITE NO. 4	So. of Salt River on	Presently used as a materials recovery area. Future unclear	12 acres	6	Kachina Redim	Water, electricity, sewer.	15.0 mi. 16.5 mi. 8.0 mi.
SITE NO. 3	No. of Salt River on McKellips Rd. I mi. SW of the intersection of McKellips Rd. & Alma School Rd.	Presently undeveloped. Virgin area.	12 acres	Not for sale. Lease would be \$2000.00 per acre per year.	SRPMIC		14.0 mi. 18.5 mi. 18.0 mi.
SITE NO. 2	No. of Salt River on McDowell Rd. I mi SW of the intersection of McDowell Rd. & Country Club Drive.	Presently undeveloped. Formerly used as a landfill site.	12 acres	Not for sale. Lease would be \$2000.00 per acre per year.	SRPMIC	a:	12.5 mi. 20.5 mi. 20.0 mi.
SITE NO. 1	No. of Salt River on beeline Hwy. 2 mi. NE of the inter- section of McDowell Rd. and Country Club Drive.	Presently used as a sanitary landfill site.	12 acres	Not for sale. Lease would be \$2000.00 per acre per year.	SRPMIC		15.0 mi. 21.0 mi. 24.5 mi.
CRITERIA	LOCATION	LAND USE	AREA	Cost	OWNER	UTILITIES	DISTANCE/H from /S City /T Halls (one-way)

## EXHIBIT #34

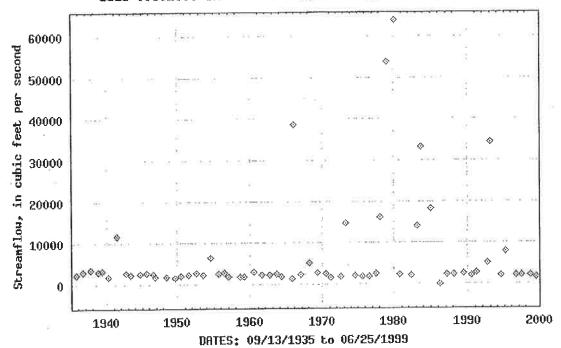


SMOG-MAKER — Black acrid smoke soared skyward this morning from a private dump east of Hayden and south of McDowell. County health authorities said no state or county law specifically prohibits dump fires. A state senate committee yesterday killed a bill providing \$35,000 for investigation of smog in Arizona. The dump above is owned by Hal Adams, who leases a portion of it to the Garbage Service Company.

EXHIBIT #35

## श्री।

#### USGS 09502000 SALT R BL STEWART MOUNTAIN D ARIZ



44 Day 3

Water Resources

Data Category: Geographic Area: Surface Water 

Arizona ▼ GO

## Peak Streamflow for Arizona

USGS 09502000 SALT R BL STEWART MOUNTAIN D ARIZ

Available data for this site Station home page

GO:

Maricopa County, Arizona

Hydrologic Unit Code 15060106

Latitude 33°33'10", Longitude 111°34'33" NAD27

Drainage area 6,232.00 square miles

Gage datum 1,370. feet above sea level NGVD29

Output formats	
Table	
<u>Graph</u>	
Tab-separated file	
WATSTORE formatted file	
Reselect output format	

Water Year	Date	Gage Height (feet)	Stream- flow (cfs)
1935	Sep. 13, 1935		2,260 <sup>6</sup>
1936	Jul. 15, 1936		2,900 <sup>6</sup>
1937	Sep. 16, 1937		3,450 <sup>6</sup>
1938	Sep. 14, 1938		3,000 <sup>6</sup>
1939	Apr. 19, 1939		3,170 <sup>6</sup>
1940	Mar. 27, 1940		1,730 <sup>6</sup>
1941	May 7, 1941		11,700 <sup>6</sup>
1942	Sep. 10, 1942		2,860 <sup>6</sup>
1943	Jun. 10, 1943		2,380 <sup>6</sup>
1944	Sep. 15, 1944		2,520 <sup>6</sup>
1945	Sep. 20, 1945		2,780 <sup>6</sup>
1946	Aug. 30, 1946		2,570 <sup>6</sup>
1947	Nov. 1, 1946		1,830 <sup>6</sup>
1948	Jun. 14, 1948		1,900 <sup>6</sup>
1949	Sep. 8, 1949		1,630 <sup>6</sup>
1950	Jul. 8, 1950		2,000
1951	Jul. 19, 1951		2,200

Water Year	Date	Gage Height (feet)	Stream- flow (cfs)
1967	Dec. 19, 1966		2,3201,6
1968	Feb. 28, 1968		5,110 <sup>1,6</sup>
1969	May 2, 1969		2,800 <sup>1,6</sup>
1970	Jun. 24, 1970		2,530 <sup>1,6</sup>
1971	Mar. 19, 1971		1,640 <sup>1,6</sup>
1972	Aug. 2, 1972		1,780 <sup>1,6</sup>
1973	Арт. 1, 1973		14,800 <sup>1,6</sup>
1974	Aug. 16, 1974		2,020 <sup>1,6</sup>
1975	Sep. 19, 1975		1,7801,6
1976	Aug. 3, 1976		1,810 <sup>1,6</sup>
1977	Aug. 5, 1977		2,420 <sup>1,6</sup>
1978	Mar. 2, 1978		16,100 <sup>1,6</sup>
1979	Jan. 19, 1979		54,000 <sup>1,6</sup>
1980	Feb. 16, 1980		64,000 <sup>1,6</sup>
1981	Oct. 4, 1980		2,360 <sup>1,6</sup>
1982	Jun. 2, 1982	0	1,950 <sup>1,6</sup>
1983	Mar. 22, 1983		14,100 <sup>1,6</sup>

1952	Sep. 2, 1952		2,780 <sup>6</sup>
1953	Jul. 13, 1953		2,200 <sup>6</sup>
1954	Aug. 19, 1954		6,610 <sup>6</sup>
1955	Sep. 2, 1955		2,620 <sup>6</sup>
1956	Jul. 9, 1956		2, <b>720</b> <sup>6</sup>
1957	Dec. 28, 1956		1,730
1958	Sep. 3, 1958		1,880
1959	Mar. 18, 1959		1,900
1960	Jul. 11, 1960		2,980 <sup>6</sup>
1961	Jul. 17, 1961	5.08	2,210 <sup>6</sup>
1962	Aug. 30, 1962	5.15	2,320 <sup>6</sup>
1963	Jul. 26, 1963	5.21	2,480 <sup>6</sup>
1964	Mar. 17, 1964	4.79	1,940
1965	Sep. 16, 1965	4.31	1,460
1966	Jan. 1, 1966		38,6001,0

1984	Oct. 2, 1983	33,300 <sup>1,6</sup>
1985	Dec. 29, 1984	18,300 <sup>1,6</sup>
1986	Apr. 5, 1986	0.001,6
1987	Mar. 23, 1987	2,240 <sup>1,6</sup>
1988	Feb. 28, 1988	2,3401,6
1989	Jul. 8, 1989	2,420 <sup>1,6</sup>
1990	Jun. 28, 1990	2,040 1,6
1991	Mar. 2, 1991	2,8701,6
1992	Sep. 4, 1992	5,200 <sup>1,6</sup>
1993	Jan. 20, 1993	34,500 <sup>1,6</sup>
1994	Aug. 4, 1994	2,090 <sup>1,6</sup>
1995	Mar. 10, 1995	7,850 <sup>1,6</sup>
1996	Aug. 14, 1996	2,030 <sup>1,6</sup>
1997	Jul. 3, 1997	2,0901,6
1998	Aug. 28, 1998	1,9501,6
1999	Jun. 25, 1999	1,610 <sup>6</sup>

Peak Streamflow Qualification Codes.

• 1 -- Discharge is a Maximum Daily Average

• 6 -- Discharge affected by Regulation or Diversion

Questions about data gs-w-az NWISWeb Data Inquiries@usgs.gov Feedback on this websitegs-w-az NWISWeb Maintainer@usgs.gov Surface Water for Arizona: Peak Streamflow http://waterdata.usgs.gov/az/nwis/peak?

Return to top of page

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Water Resources

 Data Category:
 Geographic Area:

 Surface Water
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 Arizona
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# Monthly Streamflow Statistics for Arizona usgs 09502000 salt R BL STEWART MOUNTAIN D ARIZ

Available data for this site | Surface-water: Monthly streamflow statistics | GO

Maricopa County, Arizona
Hydrologic Unit Code 15060106
Latitude 33°33'10", Longitude 111°34'33" NAD27
Drainage area 6,232.00 square miles
Gage datum 1,370. feet above sea level NGVD29

Output formats

HTML table of all data

Tab-separated data

Reselect output format

35/2007 A 200		Monthly mean streamflow, in ft <sup>3</sup> /s										
YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1934										956	408	53.3
1935	9.58	21.9	32.4	684	1,215	1,771	1,899	919	1,472	1,077	646	375
1936	400	31.6	624	1,188	1,620	2,055	1,865	1,313	1,940	992	669	294
1937	24.0	99.8	20.2	807	1,953	2,062	2,510	2,737	2,451	1,157	651	218
1938	190	296	295	1,578	1,613	2,025	2,003	1,721	2,114	1,044	641	123
1939	33.0	230	473	1,103	1,255	1,472	1,539	1,115	196	680	494	373
1940	72.3	21.0	737	935	955	1,129	1,119	602	564	77.5	123	11.9
1941	10.8	8.82	8.87	2,438	5,716	1,692	1,636	1,746	1,602	1,111	771	472
1942	404	1,061	831	917	1,366	1,550	1,722	1,765	1,908	1,226	759	729
1943	69.3	452	431	952	1,336	2,036	1,864	1,009	1,510	1,177	902	528
1944	208	326	242	294	1,009	1,245	1,373	1,089	1,732	1,314	606	519
1945	34.5	403	319	616	1,115	1,306	1,384	1,114	1,807	1,228	1,082	648
1946	39.4	762	1,423	989	1,317	1,676	1,191	1,200	1,141	1,149	525	662
1947	397	479	705	911	749	1,016	910	852	992	562	304	339
1948	161	394	447	673	907	1,062	1,042	1,030	1,154	630	483	352
1949	10.8	13.0	9.71	9.53	10.2	830	1,202	1,073	884	538	571	222
1950	17.5	42.2	737	1,114	1,002	1,247	1,092	1,138	1,164	619	253	287
1951	57.2	56.2	769	634	402	1,243	1,404	983	10.3	4.41	1.40	298
1952	3.02	1.75	3.85	3,49	241	346	1,041	1,356	1,018	63.9	1.36	.042
1953	.000	279	969	1,010	770	1,491	1,498	1,576	1,339	396	317	537
												i

1954	143	361	892	786	728	1,097	854	1,264	993	399	294	605
1955	4.81	221	909	1,169	934	1,318	1,232	1,031	1,504	434	.54	5.98
1956	80.9	143	1,011	885	801	1,441	1,654	1,495	1,460	291	94.4	366
1957	2.28	.39	62.1	465	1.07	908	1,201	1,341	1,231	65.3	.42	.000
1958	.000	.69	102	46.6	582	803	963	1,211	899	62.8	1.02	.15
1959	.000	40.2	1,285	709	717	1,229	1,426	889	1,085	285	43.7	48.0
1960	206	10.2	137	305	530	935	1,302	1,314	1,077	232	3.36	65.1
1961	5.12	316	1,340	867	1,231	1,481	1,650	1,174	979	261	47.3	8.00
1962	36.2	151	152	971	1,122	1,320	1,315	1,926	1,363	66.5	112	.000
1963	.000	91.2	1,465	1,050	1,359	1,822	1,969	1,134	1,038	132	6.91	104
1964	26.4	199	1,206	929	999	1,298	1,343	590	517	349	90.9	1.58
1965	1.17	29.7	104	4.47	266	569	749	535	652	164	191	1,823
1966	3,983	1,238	1,600	1,607	775	818	1,253	1,213	1,125	299	29.5	1,193
1967	77.0	22.6	940	821	867	993	848	1,167	1,147	537	5.05	34.9
1968	7.68	1,991	2,238	2,566	1,278	1,236	1,106	1,177	1,775	924	423	799
1969	188	475	611	1,388	2,147	2,269	1,129	205	1,310	866	13.6	796
1970	172	757	649	1,445	1,605	2,048	1,603	1,283	1,108	315	6.19	4.42
1971	4.08	579	1,324	1,113	1,213	1,061	1,288	608	585	140	6.97	8.45
1972	5.36	5.15	466	1,204	1,344	1,492	1,482	1,166	860	697	45.9	8.94
1973	7.92	156	3,273		5,261	1,911	1,785	1,831	1,881	1,207	84.2	9.66
1974	1.73	1.21	942	1,313		1,762		1,749	1,310	38.3	.11	3.13
1975	2.76	15.8	517	334	1,258	1,661	1,669	1,680	1,434	327	1.26	1.16
1976	198	801	18.7	400	810	1,236	1,445		1,219	391	5.31	2.06
1977	.000	.000	457	1,157	1,254			1,940	1,098	416	2.02	.45
1978	.000	1.06	980	1,115	1,517	1,714	1,694		1,562	734	155	7,169
1979	9,747							-	1,834			
1980	109									-	3.23	2.77
1981	408			-				1	1,244	1	5.45	3,56
1982	3.60	1.51		_					1,463		150	
1983	916		5,313						1,031			3,501
1984	1,650							-	1,343			1,397
1985	3,410					1	********	10	1,258	-	6.97	
1986	514										10.6	
1987	708			223	1,130		11	1,631 1,617			42.2	
1988	10.8				1,906			1,838			1.68	-
1989	27.6				1,035			3				
1990	4.29				1,424			10	1,193			
1991	4.29	119	1,000	1,513	1,7754	1,033	1,702	1,000	11,175	1 000		

1992	1,491	2,448	3,296	3,052	2,846	2,322	1,665	2,216	1,658	24.8	103	467
1993	20,210						1,342				90.1	3.11
1994	204	656	789	1,077	526	1,260	1,812	1,885	1,067	638	8,36	310
1995	556	2,562	5,467	1,406	287	2,124	1,957	1,736	1,462	650	7.91	8.49
1996	504	604	611	1,018	1,325	1,818	1,638	1,782	636	471	7.54	400
1997	203	8.23	256	416	1,305	1,676	1,892	1,617	1,051	497	8.51	148
1998	106	13.9	8.15	181	908	498	1,582	1,755	1,358	62.4	7.00	75.1
1999	218	8.50	390	316	722	1,175	1,065	1,053	995	709	29.1	7.39
2000	7.44	8.28	7.99	342	957	962	1,143	743	205	356	155	7.44
2001	8.78	10.1	7.06	68.5	1,042	1,219	1,153	1,019	1,385			
Mean of monthly streamflows	721	897	1,138	1,244	1,360	1,476	1,507	1,387	1,229	616	188	420

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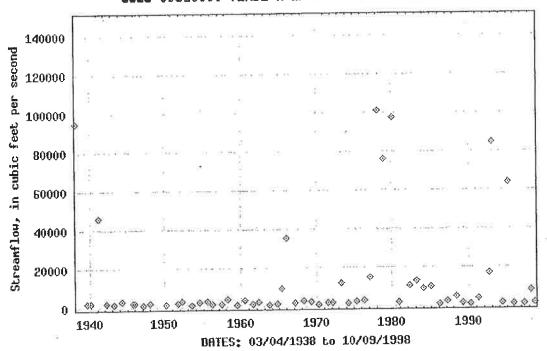
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### MINKS

#### USGS 09510000 VERDE R BL BARTLETT D ARIZ



Water Resources

Data Category: Surface Water - Arizona

' Geographic Area:

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## Peak Streamflow for Arizona

USGS 09510000 VERDE R BL BARTLETT D ARIZ

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Maricopa County, Arizona Hydrologic Unit Code 15060203 Latitude 33°48'30", Longitude 111°39'09" NAD27 Drainage area 6,188.00 square miles

Graph Tab-separated file WATSTORE formatted file Reselect output format

Table

**Output formats** 

Gage datum 1,572.34 feet above sea level NGVD29 Gage Stream-

Water Year	Date	Height (feet)	flow (cfs)
1938	Mar. 4, 1938	21.90	95,000
1939	Sep. 11, 1939	7.64	$2,120^6$
1940	Mar. 9, 1940	7.63	$2,120^6$
1941	Mar. 15, 1941	17.07	45,800 <sup>6</sup>
1942	Apr. 3, 1942	5.20	1,9206
1943	Mar. 16, 1943	5.06	1,780 <sup>6</sup>
1944	Mar. 29, 1944	5.90	2,940 <sup>6</sup>
1945	Sep. 10, 1945	4.92	1,860 <sup>6</sup>
1946	Dec. 29, 1945	5.12	1,990 <sup>6</sup>
1947	Mar. 15, 1947	4.41	1,050 <sup>6</sup>
1948	Dec. 28, 1947	5.72	2,2006
1950	Feb. 23, 1950	4.95	1,640
1951	Sep. 13, 1951		2,080
1952	Apr. 1, 1952		3,040
1953	Jun. 24, 1953		1,230
1954	Jul. 8, 1954		2,440
1955	Jul. 23, 1955		3,220
1	7	11	11

Water Year	Date	Gage Height (feet)	Stream- flow (cfs)
1969	Mar. 28, 1969	5.87	2,720 <sup>6</sup>
1970	Mar. 25, 1970	4.17	1,010 <sup>6</sup>
1971	Jul. 28, 1971	4.10	2,130 <sup>6</sup>
1972	Mar. 2, 1972	4.13	2,240 <sup>6</sup>
1973	Apr. 14, 1973	11.42	12,300 <sup>6</sup>
1974	Feb. 28, 1974	3.45	1,810 <sup>6</sup>
1975	May 2, 1975	7.17	2,440 <sup>6</sup>
1976	Apr. 28, 1976	7.47	2,920 <sup>6</sup>
1977	Mar. 5, 1977	6.12	15,000 <sup>6</sup>
1978	Mar. 2, 1978	25.90	101,000 <sup>6</sup>
1979	Dec. 18, 1978	22,60	75,800 <sup>6</sup>
1980	Feb. 15, 1980	25.40	97,300 <sup>6</sup>
1981	Oct. 6, 1980	4.14	1,960 <sup>6</sup>
1982	Mar. 14, 1982		10,700 <sup>1,6</sup>
1983	Feb. 9, 1983		13,300 <sup>1,6</sup>
1984	Dec. 26, 1983		9,0201.6
1985	Dec. 28, 1984		9,910 <sup>1,6</sup>

1956	Mar. 22, 1956		1,400 <sup>6</sup>
1957	Jun. 5, 1957		1,480 <sup>6</sup>
1958	Mar. 25, 1958		4,150 <sup>6</sup>
1959	Jul. 15, 1959		1,280 <sup>6</sup>
1960	Jul. 4, 1960		3,500 <sup>6</sup>
1961	Jun. 16, 1961		1,600 <sup>6</sup>
1962	Mar. 20, 1962	4.53	2, <b>77</b> 0 <sup>6</sup>
1963	Sep. 17, 1963	2.94	985 <sup>0</sup>
1964	Aug. 18, 1964	3.28	1,330 <sup>6</sup>
1965	Apr. 20, 1965	8.77	9,390
1966	Dec. 30, 1965	16.95	35,600 <sup>6</sup>
1967	Feb. 16, 1967	4.85	1,870 <sup>6</sup>
1968	Mar. 28, 1968	6.37	3,100 <sup>6</sup>

1986	Mar. 7, 1986	1,160 <sup>1,6</sup>
1987	Mar. 21, 1987	2,810 <sup>1,6</sup>
1988	Apr. 26, 1988	5,220 <sup>1,6</sup>
1989	Mar. 3, 1989	1,3201,6
1990	Mar. 22, 1990	1,250 <sup>1,6</sup>
1991	Mar. 30, 1991	4,280 <sup>1,6</sup>
1992	Aug. 24, 1992	 16,900 <sup>1,6</sup>
1993	Jan. 8, 1993	84,700 <sup>1,6</sup>
1994	Jun. 26, 1994	1,6101,6
1995	Feb. 15, 1995	64,100 <sup>1,6</sup>
1996	Dec. 29, 1995	905 <sup>1,6</sup>
1997	Apr. 25, 1997	1,0901,6
1998	Apr. 13, 1998	8,100 <sup>1,6</sup>
1999	Oct. 9, 1998	1,4801,6

Peak Streamflow Qualification Codes.

• 1 -- Discharge is a Maximum Daily Average

• 6 -- Discharge affected by Regulation or Diversion

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Water Resources

Geographic Area: Data Category: ▼ Arizona Surface Water

GO

## Monthly Streamflow Statistics for Arizona USGS 09510000 VERDE R BL BARTLETT D ARIZ

Available data for this site Surface-water: Monthly streamflow statistics 💌

GO

Maricopa County, Arizona Hydrologic Unit Code 15060203

Latitude 33°48'30", Longitude 111°39'09" NAD27

Drainage area 6,188.00 square miles

Gage datum 1,572.34 feet above sea level NGVD29

**Output formats** 

HTML table of all data

Tab-separated data

Reselect output format

T/D   D	Monthly mean streamflow, in ft <sup>3</sup> /s												
YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1904	237	226	184	119	126	62.9	729	1,625	482	188	210	241	
1905	1,419	7,713	8,781	5,225	833	283	245	567	771	544	3,433	875	
1906	812	1,202	5,467	1,029	247	150	234	743	211	181	312	2,641	
1907	2,429	2,619	3,767	838	251	209	217	430	404	614	375	323	
1908	306	1,973	1,395	301	443	146	462	880	356	265	281	3,129	
1909	1,760	1,459	2,029	1,258	200	135	379	1,255	475	160	221	354	
1913							orivori i	V110		204	339	306	
1914	957	3,045	717	251	154	114	204	234	230	327	270	652	
1915	1,242	2,447	3,590	2,181	2,663	207	327	349	231	177	249	393	
1916	8,231	3,766	5,184	696	232	159	201	508	1,296	726	327	340	
1917	1,222	1,495	1,759	6,002	1,253	234	417	727	389	247	243	266	
1918	394	905	4,613	355	160	137	191	545	190	193	346	458	
1919	345	953	1,560	1,333	173	118	2,126	906	471	741	2,849	2,230	
1920	2,235	8,956	1,883	1,041	305	209	180	456	228	241	463	342	
1921	315	335	522	236	167	126	296	1,695	367	442	288	1,437	
1922	2,594	2,749	3,279	1,070	256	163	209	333	240	185	283	1,229	
1923	347	1,222	2,207	794	193	116	199	254	1,928	270	968	3,500	
1924	994	358	523	1,646	172	99.2	187	105	202	228	212	433	
1925	298	329	413	452	204	124	204	354	1,128	779	341	368	
1926	298	293	720	4,423	408	117	193	248	347	246	215	432	
						1						3	

1927	320	7,080	2,029	809	195	202	259	474	1,829	279	297	424
1928	480	1,421	995	241	169	112	133	482	189	263	275	303
1929	320	412	1,368	2,140	149	116	164	581	390	175	217	234
1930	291	443	1,341	545	175	98.8	312	624	283	225	514	356
1931	229	3,019	639	252	246	97.0	161	779	376	213	600	948
1932	478	6,454	3,640	777	199	137	224	247	134	292	208	294
1933	382	364	726	299	344	148	182	164	231	233	206	253
1934	260	269	226	257	120	106	124	452	215	166	267	317
1935	1,046	2,236	1,971	1,000	183	114	120	592	485	238	247	278
1936	265	866	969	692	150	92.5	223	434	318	211	312	291
1937	461	6,333	4,076	1,419	188	142	216	163	187	205	215	262
1938	272	406	4,715	223	128	98.7	138	290	203	163	202	389
1939	297	338	806	396	129	86.1	82.5	297	968	422	275	388
1940	297	546	668	343	154	90.6	146	281	343	531	447	302
1941	466	3,374	4,902	4,827	645	986	813	794	1,182	229	242	105
1942	58.9	173	799	814	720	862	550	178	133	144	215	172
1943	322	449	950	973	727	114	96.8	62.9	473	298	219	33.6
1944	303	233	969	1,716	714	901	561	780	527	186	28.2	443
1945	280	466	886	1,175	768	774	380	432	754	217	170	229
1946	254	315	259	607	319	140	67.4	122	471	96.9	124	464
1947	210	465	577	381	225	139	130	60.1	321	366	217	426
1948	185	112	673		259	242	96.8	131	293	225	117	150
1949	88.8	544	1,661	1,640	1,340	710	530	597	935	331	27.3	222
1950	321	542	512	-	132	364	265	465	312	122	208	232
1951	204	195			344	94.1	94.0	112	994	552	283	202 318
1952	131				1,039			783				53.0
1953	373							591			52.8	60.2
1954	51.8			-		877	1,091	637	513	61.1	59.6 174	379
1955	70.6		1	4		524		176		117	99.7	102
1956	108		-	1		479		309		104 270		276
1957	53.3		1			862	689	407				228
1958	151	-	1			1,027	1,177	-				73.1
1959	172		-			691	667	267			238	205
1960	208	-	-					199				220
1961	107								1	-		219
1962	170	-	-				-	193	1	<u> </u>		567
1963	183	-				-	1		-	-		236
1964	206	170	110	93.4	154	532	510	574	114	209	122	230

1965	74.5	82 1	1,259	2.348	1.307	1,144	1,255	1,508	754	303	44.6	1,416
1966	1,693	497	883		1,148	1,854	1,019	373	141	525	502	97.6
1967	245	1,126	310	127	617	670	913	532	302	130	374	317
1968	509	197	434	662	1,151	1,639	1,445	955	400	164	78.1	39.1
1969	69.7	106	1,640	1,034	213	403	1,290	1,925	92.3	46.8	350	33.5
1970	27.1	27.9	212	86.2	36.3	47.7	580	236	336	721	474	425
1971	213	100	40.9	43.3	39.5	503	607	464	819	308	417	433
1972	164	717	855	98.7	51.5	81.9	382	383	409	176	547	1,308
1973	1,121	1,195	4,776	5,247	1,197	962	1,055	863	481	51.8	588	958
1974	111	1,276	82.2	77.2	128	459	131	254	74.8	539	266	507
1975	351	294	410	785	231	222	405	419	171	239	517	433
1976	351	541	1,105	771	350	563	716	443	111	219	418	498
1977	269	617	609	12.7	7.45	112	37.7	23.9	22.3	62.2	340	344
1978	160	139	9,024	841	467	918	907	612	185	21.2	220	4,591
1979	3,551	1,283	3,595	1,755	202	1,005	1,207	815	287	42.1	569	796
1980	920	13,680	1,527	1,146	679	1,276	1,076	1,221	211	694	692	815
1981	158	.000	.39	4.43	290	536	683	227	112	208	293	256
1982	245	302	2,721	1,598	767	770	925	545	225	374	439	1,902
1983	266	3,393	2,826	1,824	628	906		636	974	991	579	1,305
1984	148	152	479	581	550	376		323	152	385	581	903
1985	213	834	1,545	715	685	635			95.3	459	493	406 520
1986	473	530		226	226		-		269	711	566	480
1987	124	415	1	289	239	633			218	793	426 601	524
1988	421	652				684	-	470	138	497 574	530	501
1989	395	797	11	99.8		284		-	258	163		
1990	244			4 100				1			461	
1991	264		-	-					-	1,046	-	
1992	111		2,798	1		1	-	-	89.3	124	390	-
1993	14,770			1		-	-			299		-
1994	259			1			4	-		301	481	489
1995	213			-	1					The state of		
1996	272		-	-	-	-	-	-	-			
1997	114		-			-		-	-		1	-
1998	324				-		4	-	1		-	1
1999	485					-	===					-
2000	364	-	-					=	1		JL	
2001	229	33	1 38	2 08	12.	12	12				1	
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Surface Water data for Arizona: Monthly StreamHow Staushes

of monthly streamflows	707	1,369	1,526	962	411	449	468	477	385	320	385	581	
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EXHIBIT #36

#### Bennett, Steven

From:

Bennett, Steven

Sent:

Friday, January 24, 2003 7:47 AM

To: Subject: 'graf@sc.edu' Salt River Issue

#### Professor Graf:

It was a pleasure speaking with you yesterday.

As we discussed, I represent the City of Scottsdale concerning its use of a landfill located on the Salt River Pima-Maricopa Indian Community reservation land. The issue I'm dealing with is an allegation that for an unspecified six month period in 1961-1962, that landfill, located ca. one mile southwest of Country Club Drive and McDowell Road, was closed because of flooding. As a result, it is alleged Scottsdale-generated wastes were hauled to another landfill in Phoenix that is now the subject of a remediation action. I am defending the City against a claim that it should now pay for a portion of the cleanup costs associated with the Phoenix landfill.

The evidence I've discovered so far, including some USGS stream flow data, indicates the Salt River would not have had sufficient stream flow volume to have flooded the reservation landfill at the time in question. Whatever information or opinion you could provide as to the probability/improbability of any such flooding having occurred would be greatly appreciated.

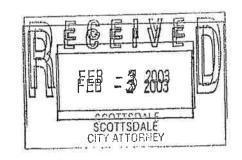
Thank you again for your time and attention to this matter.

Steven Bennett Deputy City Attorney City of Scottsdale 3939 Drinkwatr Boulevard Scottsdale, AZ 85251 480-312-2405

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## EXHIBIT #37





January 28, 2003

DEPARTMENT OF GEOGRAPHY

Steven Bennett Deputy City Attorney City of Scottsdale 3939 Drinkwater Blvd. Scottsdale, AZ 85251

Dear Steve,

This letter is in response to your request by telephone and e-mail for an evaluation of the contention that "for an unspecified six month period in 1961-1962, that landfill, located ca. one mile southwest of Country Club Drive and McDowell Road, was closed because of flooding."

My response to your query is predicated on my personal research and field experience in and near the channel of the Salt River in the vicinity of the Phoenix metropolitan area, including the area you mention. I have conducted numerous research efforts concerning the river under various sponsorship, and have published extensively on the results as well as serving as an expert witness in several cases. For the readers of this letter who do not know me, I attach a copy of vita detailing my professional career.

Based on my knowledge of the river and data describing its hydrologic history, flooding did not occur in the river in 1961 or 1962. For the purposes of this statement, I use the following definitions:

flooding: flow of water in the channel that is substantial enough to alter the channel or to pose cross-channel transportation problems at a time when Country Club Drive and Alma School Road were paved roads on the bed of the channel without bridges. Flooding does not include temporary flows at depths of a couple of feet lasting less than a day resulting from local storm runoff from nearby terrain.

river: the channel of the Salt River between its terraces and along its course from the Country Club Crossing to the Alma School Crossing

data: hydrologic data describing the peak flows of the river in the vicinity of Phoenix, downstream from Granite Reef Dam, as collected and collated by the Salt River Project, as well as various aerial photographs

hydrologic history: historical view of flows of water in the channel, particularly peak flows 1961 or 1962: the calendar years, that is, from January 1, 1961, to December 31, 1962.

There are three sources of direct information about flooding of the channel in this area: statistical data, aerial photographic data, and newspaper accounts.

The primary source of statistical data on flow of the river in the channel between Country Club Drive and Alma School Road is the Salt River Project. Their data may be accessed through their public records office. I published summaries of these data in various forms in the following publications:

Graf, W. L., 1983. Flood-related channel change in an arid-region river. Earth Surface Processes and Landforms 8:125-139 [contains a general account of discharge events and the changes they produced in the channel]

Graf, W. L., Beyer, P. J., and Wasklewicz, T. A., 1994. Geomorphic Assessment of the Lower Salt River, Central Arizona. U.S. Army Corps of Engineers, Contract Report DACW09-94-M-0494 Part 2, 264 p [the most complete accounting of discharge below Granite Reef Dam, including a complete accounting of the peak flow and total amount of water released from Granite Reef Dam for each year from 1891 to 1993]

The statistical data collected by the Salt River Project reveals that during the calendar year 1961 the peak flow of the river below Granite Reef Dam was 125 cubic feet per second. Since the channel is about 300 feet wide, and the velocity of flow is likely to have been less than 5 feet per second, the resulting depth of flow in the area in question (if the flow even reached that far) was only a few inches deep. However deep it was, it did not last long, because the total volume was recorded by Salt River Project as less than 1,000 acre feet. In 1962 there were no recorded flows below Granite Reef Dam.

Aerial photography of the river in the reach in question is readily available, and is useful because the images can be examined for evidence of flow at the time of the photograph as well as evidence of flows that occurred within several months prior to the date of the photographs. A local aerial photography company, originally named Landis Aerial Survey and now known as Landiscor, photographs the entire metropolitan area every year within a few days of January 1. Photographs from early 1961, 1962, and 1963 are available for purchase from the company in Phoenix. Some of the images are also available for inspection at the map library, Noble Science Library, Arizona State University. Additionally, the US Geological Survey photographed the area for mapping purposes on May 18, 1961. Other photography might be turned up by an extensive search.

I do not have copies of the annual Landis photography, but I do have copies of the US Geological Survey coverage. Frames GS-VAJK 1-0197, GS-VAJK 1-0198, and GS-VAJK 1-0279 show the reach of the river between Country Club Drive and Alma School Road. These images taken on May 18, 1961, show no water in the channel, and show vegetation growing in

the channel that suggests that there had been no flow for several months. The photographs show extensive sand and gravel mining operations near Country Club Drive that exhibit no evidence of disturbance by flows, and there are even some structures in the channel (houses or farm buildings) near Alma School Road.

A complete search of the Phoenix Newspapers' morgue for the two years in question would not be definitive, but if a flood event did occur during the period of interest, they are likely to have been mentioned. This is because between 1941 and 1961, there was virtually no flow in the channel except for local runoff. In four years from that 20-year period, flows of greater than 1,000 cubic feet per second were released over Granite Reef dam (1943, 1951, 1955, and 1959), but in all these cases the total amount was less than 20,000 acre feet, a small amount.

Sincerely,

NUL

William L. Graf
Educational Foundation University Professor
and
Professor of Geography

Enclosed: Complete Vita

#### WILLIAM LEGRAF

Education Foundation University Professor

Professor of Geography

Department of Geography Telephone: 803-777-5234 University of South Carolina FAX: 803-777-1972

Columbia, SC 29208 E-Mail: graf@sc.edu

February 15, 2003

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#### WILLIAM L. GRAF

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#### CAREER BACKGROUND

#### ACADEMIC TRAINING

B.A., June 1969, University of Wisconsin, Madison N.Sc., January 1971, University of Wisconsin, Madison Ph.D., August 1974, University of Wisconsin, Madison

Disciplines: Major, Physical Geography Minor, Water Resources Management

Fluvial Geomorphology

Specialities:

Hydrology Public Land and Water Policy Aerial Photographic Interpretation Geographic Information Analysis

#### EXPERTISE

Primary: Iluvial geomorphology, bydrology, fiparian ecology, and the impact of human activities on rivers; public land and water pulley

Secondary: the conflict between economic development and environmental preservation and restoration; application of science to decision-making; geographic information science for environmental systems

#### PROFESSIONAL EXPERIENCE

1969: Teaching Assistant, Department of Geography, University of Wisconsin, Mudison; Physical Geography

1969-70: Research Assistant, Department of Geography, University of Wisconsin, Mudison; Remote Sensing

1970-71: Research Assistant, Department of Geography, University of Wisconsin, Mudison: Aerial Photographic Interpretation and Geomorphology

1971-1974: Intelligence Officer (Captain), U.S. Air Force, Lecturer, Armed Forces Air Intelligence Training Center, Lowey Air Force Base, Denvert: Aerial Photographic Interpretation, Computer Applications of Geographic Intelligence

1974-78: Assistant Professor and Associate Professor, Department of Geography, and Research Associate, Institute of Urban and Regional Research, University of Iowa

WILLIAM LEGRAF

WILLIAM L. GRAF

William L. Graf is Educational Foundation University Professor and Professor of Geography at the University of South Carolina. His Ph.D. from the University of Wisconsia. Multison, is with a mojor in physical geography and a minor in water resources management. His specialise include fluvial geomorphology and policy for public land and water. With emphasis on river channel change, human imports on river processor and mytophology, contaminant transport and storage in river sediments, and the downstream impacts of large dates. Mitch of bit work has been notificent in scale. He has treved an anofficer in the Goodpied Society of America, and it Part President of the Astrociation of American Geographers. In the use of public policy he has emphasized the interaction of a scance and decision-making, and relatation of the conflict policy he has emphasized the interaction of a scance and decision-making, and relatation of the conflict policy he has emphasized the interaction of a scance and decision-making, and relatation of the conflict policy he has emphasized his interaction of a scance and decision-making, and relatation of the conflict policy he has emphasized his interaction of a scance and decision-making, and relatation of the conflict policy he has emphasized to a scance of the conflict policy has been funded by \$2 gmats and contracts from federal, state, and local agencies, transparent, and the National Science foundation. National Geographic Society, U.S. Department of Agriculture, U.S. Department of Justice, U.S. Environmental Protection Agency, Las Alannas National Laboratory, U.S. Burcan of Reclamation, and the U.S. Army Corps of Engineers to cities, these, and private companies. He has given more than 90 professional presentations and published 124 papers, articles, book chapters, and reports on geomorphicy, tiparian ecology, river management, and the historican forces are public policy. His 8 books include t commarphic Systems of Nath American, The Calarate Rivers Busin Statellity and Me

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1978-2001; Associate Professor, Professor, and Regents' Professor. Department of Geography. Arizona State University

1981-83: Director, Center for Southwest Studies, Atizona State University

2001- : Education Foundation Endowed University Professor and Professor of Geography. University of South Carolina

#### PROFESSIONAL ORGANIZATIONS

Association of American Geographers and the Geomorphology Specialty Group of the

Geological Society of America and the Quaternary Geology and Geomorphology Division of the Society

#### AWARDS

- 1. Fellowship and Scholarship, 1970, U.S. Department of Interior, Water Pollution Control Administration (scholarship for water resources management based on academic
- Fellowship, 1982, Geological Society of America (in recognition of published contributions in the earth sciences)
- G. K. Gilhert Avard for Excellence in Geomorphological Research, 1984, by the Geomorphology Specialty Group of the Association of American Geographers (in recognition of published research in the fluxial geomorphology of the American West)
- Gladys W. Cole Memorial Research Award for Arth Region Geomorphological Research, 1954, by the Quaternary Geology and Geomorphology Division of the Geological Society of America (in recognition of published research in the thorial geomorphology of orid regions and a proposed study of heavy metal transport in
- Fellowship, 1985. Arizona-Nevada Academy of Science (in recognition of outstanding contributions to science and continued support of the Academy)
- Arizona State University Distinguished Research Professorship Award, 1987, by the University Graduate Council and the Graduate College (in recognition of research in geomorphology and training of graduate students)

- Honors Award of the Association of American Geographys. 1990, (in recognition of research in geography and geomorphology, teaching of students at all levels, and service to the profession.
- Distinguished Visiting Professorship, 1992. University College London (in recognition of research contributions to geography and earth sciences)
- John Simon Guggenhebu Foundation Pelloverldp, 1993 (in reaganition of research contributions in science and policy and for support of research on American rivers)
- Thomas B. Nohm Distinguished Lectureship. 1994. U.S. Geological Survey (in recognition of research and writing on the role of science in public policy for rivers)
- Regents' Professorship, 1994 and thereafter, Arizona State University (in recognition of tescarch, teaching, and service)
- Graduate Mentor Award, 1998, Arizona State University (in secognition of complaintent to graduate training through mentoring and career preparation of graduate students)
- Fullright Scalar Scholar Fellowship, 1999. Council for the International Exchange of Scholars, U.S. Agency for International Development, and the New Zealand/United States Educational Foundation (for research and lecturing on water restorces and river processes)
- Kirk Bryan Award, 1999, Geological Society of America (in recognition of distinguished contributions to the selence of geomorphology)
- David Linton Research Award, 2000, British Geomorphological Research Group (to recognize geomorphology and environmental change research)
- Founder's Medul of the Royal Geographical Society, 2001. Her Majesty, Queen of Great Britain and the Royal Geographical Society (in recognition of research on rivers and contributions to the use of environmental science in public policy)

#### POLICY RELATED ACTIVITIES

#### ADVISORY CONSULTATIONS (Only Initial Year Given)

 1. 1979; U.S. Army Corps of Engineers, Phoenix Urban Study Office fresearch and advisory role; environmental impact assessment of thood control works, Salt and Gila Rivers, Arizonto.

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- Page 7
- 1997: Arizona Department of Game and Fish (advisory role, development of assessment processes for riparian areas on public lands)
- 14. 1999: U.S. Environmental Protection Agency and U.S. Bureau of Reclamation (advisory role, testoration of the New River, Sulton Sen area, Culifornia)
- 2000: Government of Costa Rica, (advisory cole, river management and development, Tempisque River Basin, Costa Rica)

### MEMBERS(IIP ON POLICY ADVISORY COMMITTEES (Only Initial Year Given)

- 1. 1976: Iowii Water Resources Council, Member
- 2. 1978: Governor's Commission on Arizona Environment, Member
- 3. 1979: National Park Service and Bureau of Lund Management Planning Team, Blue Hills-Henry Mountains Natural Area, Utah
- 4. 1980: National Park Service, Public Education Team, Capitol Reef National Park, Utali
- 5. 1983: National Park Service, River Management Planning Team, Dinosaur National Monument, Utah
- 6. 1981: Member, Arizona Mapping Advisory Conucil, Member
- 1984: National Park Service, River Management Planning Team, Canyonlands National Park, Uniful
- 1986: National Park Service, Management Planning Tearn. Glen Canyon National Recreation Area, Arizona and Utah
- 1986: National Research Council, National Academy of Science, Committee to Review Glen Canyon Environmental Studies, Member
- 1988: National Science Foundation, Review Panel, Geography and Regional Science Program. Member
- 11. 1989: Arizona Board on Historic and Geographic Names. Governor Appointed
- 1991: National Research Council, National Academy of Science, Committee to Advise Bureau of Reclamation on Glen Canyon Environmental Studies, II

- 2. 1980: Camp, Dresser, McKee, Inc., Walnut Grove, California (report generation: geomorphology and geology of the western Salt River Valley, Arizona)
- 1983: Lower Colorado Regional Office, U.S. Bureau of Reclamation and the Museum of Northern Arizono, Flagstaff, Arizona (advisory tole, field investigations, report generation) archeological and geomorphic evidence along the Tucson Aquaduct, decisions on balance between preservation and development of Central Arizona Peoject.
- 1986: U.S. Army Corps of Engineers, Vicksburg Waterways Experiment Station (advisory role: location of weapons test site in the Colorado Plateau region)
- 1987: Arizona Department of Transportation (advisory role; hydraulies and geomorphology of prehistoric canal systems, Sult River Valley, Arizona)
- 1987: Sierra Delta Corporation (research, calculations; sediment yield and transport in desert mountains, fans, and floud plains. Newherry Mountains, Nevada, planning decisions for development of Laughlin, Nevada;
- 1993: Arizona State Land Department, Engineering Division (technical advisor; fluvial geomorphology of rivers in Arizona; issue of state versus federal ownership of river herist
- 1994: U.S. Army Corps of Engineers. Planning Office, Arizona Regional Office (advisory mle, report writing, planning team participation, environmental resouration of the Lower Gila River, Arizona)
- 1994: U.S. Army Corps of Engineers, Planning Office, Arizona Regional Office (advisory role, report writing, planning team) participation, environmental restoration of the Lower Salt River, Arizona)
- 1995: Arizona Department of Environmental Protection, Non-Point Source Division, Ripariant/Wetlands Unit (advisory role, management of sediment and arsenic pollution in the Verde River, Arizona)
- 1995: Los Alamos National Laboratory, Geosciences Division (advisory role, design and policy for sampling, monitoring, and surveillence of environmental quality with respect to heavy metals and radiomedides in New Mexico regional divers)
- 1997: Artzona Department of Environmental Quality. Water Quality Division (advisory tole, heavy metal contamination of a wilderness river by mine follings, Aravaipa Creek and Klondyke Mine, Arizona)

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- [492] National Research Council, National Academy of Science, Water Science and Technology Board, Member
- 1993: National Research Council, National Academy of Science, Planning Committee, Water Quality Impacts of Metal Mining and Milling, Chair
- 15. 1994: Member, Technical Advisory Board on Watercourse Modification, Arizona Department of Environmental Quality
- 1994: National Research Council, National Academy of Science, Committee on Integrative Sciences for Eurth's Upper Crust. Co-Chair
- 17. 1995: National Research Council, National Academy of Science, Committee on hynovative Watershed Munagement, Chair
- 18. 1995: National Research Council, National Academy of Science, Committee on Affavial fun Flooding Processes, Board Liason
- 19. 1995: National Research Council, National Academy of Science, Committee on Rediscovering Geography, Member
- 1996: National Research Council, National Academy of Science Workshop to Advise the President's Council on Sustainable Development, Chair
- 1997: Presidential Western Water Policy Advisory Advisory Review Commission, Invited Testimony and Report Recommendation Submissions
- 1998: National Research Council, National Academy of Science, Board on Earth Sciences and Resources, Member
- 23. 1998: National Research Council, National Academy of Science, Committee on Geography, Member
- 24 1998: Committee to Advise the President on the American Heritage Rivers Initiative.

  Member (Presidential Appointment)
- 1998: U.S. Fish and Wildlife Service, Southwester Willow Flycatcher (Endaugered Species) Recovery Policy Technical Team, Member
- 1999: Committee of Visitors, National Science Foundation, Geography and Regional Science Program, Member
- 27. 2000: Committee on the Economic, Social, and Environmental Outcomes of Dam Removal,

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Heinz Center for Science, Economics, and the Environment, Chair

- 28. 2000: National Research Council, National Academy of Science, Committee on Research Priorities in Geography at the U.S. Geological Survey, Chair
- 29. 2002: National Research Council, National Academy of Science, Committee Ecosystem Science Initiatives, Everglades National Park, Member

#### ACTIVITIES RELATED TO THE LAW

#### (Only Initial Year Given)

- 1981: O'Connor, Cavanough, Phoenix, Arizona (Vinori vs. Maricapa County Water Conservation District Number 1, for the defense, research advisory rule, depositions, court appearances; channel intrability, Ilavial processes, sails, flonding downstream from an irrigation reservoir, Agua Frin River, Arizona)
- 1981: O'Connor, Cavanaugh, Phoenix, Arizona (van Dule vs. Anderson, Lo Palonin Ranch, and Northwestern Mutual Life Insurance, for the defense, advisory rote, depositions: sedimentation and upstream flooding in an unstable river channel near an irrigation diversion dam, Gila River, Arizona
- 1981: Goldstein, Kingsley, and Myers, Inc., Phuenix, Arizona (First American Title Insurance et al. vs. Sah River Project et al., for the plaintiff, research, report generation, depositions, downstream effects of sund and gravet mining operations in a brailed channel, Sah River, Arizona)
- 1982: Coin and Wolf, Inc., Phoenix, Arizona (advisory role in negotiations, diversion of natural drainage by orban development, Cave Creek Valley, Arizona)
- 1982: Lewis und Ruca, Inc., Phoenix, Arizona (Nuvajo Nation et al. vs. United Nuclear Corporation, for the defense, research, advisory role, report generation, sediment transport downstream from a tailings pond spill near a uranium mill, Paerco River, New Mexico)
- 1982: Streich, Long, Weeks & Cardon, Phoenix, Arizona (Arizona Board of Regents ex. Hubbard, Wadoworth, Jenson & Associates et al., for the plaintiff, data acquisition: building foundation stability associated with river channel change. Sun Devil Statium and the Sult River, Arizona)
- 1983: Brown and Bain, Inc., Phoenix, Arizona (Sidney vs. Zah, for the defense, advisory role, research; aerial photographic interpretation of land use, Moenkopi, Arizona)

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- 18. 1991: Perry, Pierson & Kolsaud, Huynsupai Tribe (In the Matter of Groundwater Quality Practitus Permit No. G-0004-03, for the plaintiff, research, testimony. Hearings before Hearing Officer of the Arizona Department of Environmental Quality; heavy metal and radionaclide transport in streams in the vicinity of a proposed mine, northern Arizona)
- 19. 1991: Jones, Skelton & Hochalt Brogdon, et al. vs. City of Phoenix, for the defense, research, review, advisory role, field investigations; the impact of a waste-water treatment plant on channel location and stability in the Salt River, central Arizona.
- 1992: Brown and Bain (Musayers) vs. Zah, for the defense, research, advisory role, testimony; acrial photographic interpretation for environmental, agricultural, and land use questions in the Navajo and Hopi Nations).
- 1992: Ultigation Section, Land and Resources Division, U.S. Department of Justice (Correspondent and of Mission Indiana vg. United States, for the defense, advisory role: land use and erosion)
- 1993: National Wildlife Federation (National Wildlife Federation et al. vs. Increas of Land Management, for the plaintiff, direct and rebutal testimony, advisory role: riparian environments, grazing, and stream processes, central Colorado Plateau)
- 1995: Haralson, Kinerk & Morey (Troubling-T Ranches et al. v. Palenna Investment et al., for the plainiff, advisory role, flooding and downstream effects of a dam breach, science and public policy for management; Gillespie Dam, Gila River, Arizona)
- 1995: Hualapai Tribe and Danlel H. Israel, P.C. (Handapai Tribe v. United States, for the plaintiff, advisory role, navigability of the Colorado River in the Grand Canyon region, (2012)
- 25. 1996: U.S. Department of Justice, Environment and Natural Resources Divisions United States v. Aria, et al., for the plaintiff, advisory rule, evaluation of evidence and documents, guidance on trial evantination of witnesses, channel instability and houndary issues on the Lower Colorado River. Arizona and California;
- 1998: Jones, Skelton & Hochuli (Allin, et al. V. Premiere, International Corp., for the defendant, advisory role, collection and evaluation of data, preparation of report, trial preparation, Hash Hood events, Southern Colorado Plateau and Amelape Canyon, avoidant Advisura.

- 1983: Ellis and Buker, P.C., Phoenix, Arizana (United States w. Rousewh Water Conservation District, for the defense, advisory role, research: stream channel instability on irrigated valley alluvium, Queen Creek, Arizana)
- 1984: Indian Claims Section, Land and Natural Resources Division, U.S. Department of Justice, Washington, D.C. (White Mountain Apache Tribe vs. United States, for the defence, advisory role, research, report generation, court appearament; enaion and acdimentation on mountain watershed; with climatic change and overgrazing, White Mountain Apache Reservation, Arizona)
- 1984: Indian Claims Section, Land and Natural Resources Division, U.S. Department of Justice. Washington, D.C. tNavnja Trihe vz. United States, for the defense, advisory role, research, report generation, erusion and sedimentation on placean watersheds with climatic change and overgrazing, Navajo Reservation, Arizona, Utah, and New Mexico.
- 11. 1985: City of Thousand Oaks, California (Brown vs. City of Thousand Oaks, for the defence, advisory rule, field investigations, report generation; flouding, crosion, sedimentation, and orbanization, Calleguas Creek, California)
- 12. E987: O'Cunnor, Cavanaugh, Phoenix, Arizona tadvitory role; interaction of fluod-water and urban development, Mesa and Apache Junction, Arizona.
- 13. 1987: (Piccali vs. Lyng, for the plaintiff, research, court appearance; reservoir characteristics, Bartlett Lake on the Verde River, Arizona)
- 14. 1987: Haralson, Kinerk, and Morey (Transamerica Title vs. Columbia Group, for the plaintiff, retearch, advitory tole, deposition; flooding, river channel change, and the impact of sand and gravel mining, Santa Cruz, River, Tueson, Arizona)
- 15. 1938: Litigation Section, Land and Resources Division, U.S. Department of Justice Unifer vs. United States, for the defense, advisory tole, field investigations, deposition: flouding on pediments and the Impact of the Central Arizona Project canal)
- 1989: City Attorney, City of Phoenix, Arizona (Colomande Maily vs. Marriner Curdan et al., for the defense, research, report generation; photogramusetric analysis of tuban serial photography)
- 1941: Indian Claims Court (Globe Equity No. 59, United States and Gila River Indian Community vs. Gila Valley Irrigation District et al., for the court as a neutral party, advice and consultation; environmental change and hydrologic response in stream those:

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#### RESEARCH

#### CRANTS

(Only initial year given)

- l. 1974: The Impact of Submitian Development on Drainage Networks; Summer Research Fellowship, University of Iowa
- 1975: Suburban Development and Drainage Network Change; Office of Water Research and Technology, U.S. Department of Interior
- 1975: The Impact of Man-Introduced Safteedar on the Green River, Utali; University Research Council, University of Itawa
- 4, 1975; Gully and Channel Erosion on the Urban Fringe; National Science Foundation
- 1916: Environmental Impact Assessment Course Development and Research: University
   Council on Teaching, University of Inwa
- 1977: Landscape change on the Green River, Utah and Colurado: National Geographic Society
- 7, 1978: Arroyo Development and the Juvasion of Tannarisk; National Science Poundation
- 1978: Environmental Change on the Green River Utah: Summer Research Fellowship. University of hwa
- 1970: Phreatophyte Growth and Channel Stability on the Salt and Gila Rivers. Central Arizona; U.S. Artny Corps of Engineers
- 1979: The Palcohydrology of Skunk Creek and the Adobe Dam Site. Central Arizona: Museum of Northern Arizona (with Richard A. Eart)
- 11. 1980: Transportation and Storage of Natural Mercury in Steam Sediments of the Southern Colorado Plateau: National Geographic Society
- 12. 1980: Sudiment Transportation in a Network with Spatially Varied Flow; U.S. Department of Agriculture, Southwest Rangeland Watershed Research Center
- 13. 1981: Wilderness and the Sagebrush Rebellion: Faculty Grant-in-Aid, Arizona State University
- 14 1981: Impacts of Wilderness Land Management: Dean's Research Assistant Fund.

- 15. 1981: Channel Adjustments in the Salt River, Phoenix Metropolitan Area, Maricopa County, Arizona: U.S. Anny Corps of Engineers
- 1982: Mercury in Stream Sediments, Lake Powell Region; Faculty Grant-in-Aid, Arizona Store University
- 1982: Spatial/Temporal Variability in Fluvial Processes in Canyons of the Central Colurado Plateau; National Science Foundation
- 18. 1982: Transport and Storage of Natural Mercury in Stream Sediments of the Southern Colorado Plateau. Second Phase: National Geographic Society
- 1982: Method to Evaluate Erasion Damages Associated with Unstable Channels: U.S. Anny Curps of Engineers
- 20. 1982: Dynamics and Control of Plucatophytes, Upper Gila River, Arizona: U.S. Army Corps of Engineers
- 21. 1982: Public Policy for Land Use Planning Near Desert Mountains, City of Scottsdale, Arizona (with Brace Rhoads)
- 1983: Phreatophyte Communities and Flavial Processes, Sun Carlos Reservoir Aron. Arizona; U.S. Army Corps of Engineers
- 1983: Edit of the Arizona File of the United States Geographic Information System, Phase It; U.S. Geological Survey and the National Board of Geographic Names
- 1983: Phreatophyte Removal, Water Savings, and Replacement Species for Saluedar, Gila River Basin. Arizma: U.S. Army Corps of Engineers
- 25. 1984: Transport of Heavy Metals in Sediments of Arid-Region Rivers; Geological Society of America
- 1984: Erosion and Land Management on the Fort Apache Indian Reservation, Arizona: U.S., Department of Justice
- 1985: Erosion and Sedimentation on the Navajo Reservation, Arizona, New Mexico, and Urah; U.S. Department of Justice
- 28. 1985: The Paleohydrology of Lake Pagaluit, Utah: National Geographic Society

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- 43. 1996: Geomorphology and Policy for Sediment in the Verde River System, Arizona (Graf as co-P) with K. Randall of Arizona Department of Environmental Quality) U.S. Environmental Protection Agency
- 1996: NSF Fellowship Grant, "Retationship Between Terrain and Snowpack Accumulation for Avalanche Forcashing," PDPD (Graf is co-advisor with M. G. Macous, for Kurl Birkeland, Dissertation Improvement Granty, National Science Foundation
- 1997: Restoration of Aravaipa Creek in the Vicinity of Kludyke Mine, Arizona; Arizona
  Water Protection Fund (minor partner with Arizona Department of Environmental
  Onality)
- 1997: Functional Assessment of Riparian Systems: Arizona Department of Game and Fish (jointly with 5 cealogists and environmental managers)
- 47. 1997: Downstream Geomorphic Impacts of Lurge Dams on American Rivers: National Science Foundation
- 48. 1997: River Channel Change in an Urbanizing Environment; Long Term Ecological Research Site Supplemental Grant, National Science Foundation
- 1908: Stream Power in Mountain Rivers (Graf as advisor for Mark Found, Dissertation Improvement Grant), National Science Foundation
- 1998: Downstream Impacts of Dams on the Elwhu River, Washington Graf as advisor for Molly Publ, Dissertation Improvement Grants, National Science Foundation
- 1999: Fullnight Senior Scholar Grant (Council for the International Exchange of Scholars, U.S. Agency for International Development, and the New Zealand/United States Educational Foundation (for research and Jecuring on water resources and river
- 2000: Integrative Graduate Education and Research Training in Urban Ecology (S. G. Fisher, W. L. Graf, N. B. Grimm, E. J. Hackett, and C. L. Redman National Science Evolution
- 2000: Research Priorities in Geography at the U. S. Geological Survey (proposal for the Board on Earth Sciences and Resources, National Research Council), U. S. Geological Survey.
- 2001: Economic, Social, and Environmental Outcomes of Dam Removal (with the Heitz Center, Washington, D.C.), Federal Emergency Management Agency, Bureau of Reclamation, and Electrical Power Research Institute.

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- 1986: Spatial Analysis of Heavy Metals in Arid Region Rivers; National Science Foundation
- 30, 1987; Sediment Yield and Transport, Newherry Mountains and Laughlin Bay, Nevada; Sierra Della Corporation
- 1987: Radiocarbon Analysis of Sediment Samples from Luke Canyon, Utah: Mini-Grant, College of Liberal Arts and Sciences. Arizona State University
- 1988: Sediment Transport and Deposition of Radionuclides in the Rio Grande, 1943-1988; Los Alamos National Laboratory
- 33. 1990: Modeling Radionuclide Transport and Storage in Rivers: Los Alamos National Laboratory
- 34, 1990: Selenium Transport in the Upper Colorado River Basin; National Geographic
- 1991: Center for Southwestern Environmental Research and Policy; with 9 eninvestigators; U.S. Environmental Protection Agency
- 36. 1991: Selenium Dynamius of the Colorado River Basin; U.S. Environmental Protection
- 1993: Contaminant Transport and Storage in the Canyons of the Pajarito Plateau; Los Alamos National Laboratory
- 1993: Riparian Zono Chimalic Studies Below Glen Canyon Dam, Grand Canyon, Arizona: National Geographic Society (with D. M. Stanitski, M. G. Marcus, and A. I. Brazel)
- [994: Geomorphic Assessment and Evaluation for Environmental Restoration of the Lower Salt and Lower Gila Rivers, Arizona; U.S. Army Corps of Engineers
- 1994: Channel Stubility and Project Evaluation; Graf partion of Fland Management Policy Study, Salt and Gila Rivers (8 investigators); Flood County District of Marienpa County, Arizona
- 41. 1995: Geomorphology and Policy for Contaminant Sampling in Regional Rivers of Northern New Mexico; Los Alumos National Laboratory
- 42, 1995: Genmorphology and Riparian Habitats of Mogollon Rim Streams, Arizona; Arizona Department of Game and Fish (with Thad Wosklowicz)

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 Pending: Science for Decision Making in Dam Removals (with the Heinz Center, Wachington, D.C.), various federal and private agencies.

#### PUBLICATIONS-BOOKS

- Graf, W. L. 1985. The Colorado River: Instability and Basin Management. Washington, D.C.: Association of American Geographers. Resource Publication 84/2, 38 p.
- 2, Graf, W. L. (ed.) 1987. Geomarphic Systems of North America. Boulder, Colorado: Geological Society of America, 643 p.
- Graf, W. L. (ed.) 1988. The Salt and Gila Rivers in Central Arizona: A Geographic Field Trip Guide. Tempe, Arizona: Arizona State University, Department of Geography Publication #3, 80 p.
- Graf. W. L. 1988. Fluvial Processes in Dryland Rivers. Berlin and New York: Springer-Verlag. 346 p.
- Grof, W. L. 1990. Wilderness Preservation and the Singebrush Rebellions, Totowa, New Jersey: Rowman & Littlefield, Burnes & Noble, 352 p.
- 6. Graf., W. L. 1994. Platonium and the Ria Grande. New York and London: Oxford University Press, 329 p.
- National Research Council. 1999. Strategies for America's Watersheds. Washington. D.C.: National Academy Press, 341 p. (Gra' us principal author and committee chair of the originating Committee on Watershed Management of the National Academy of Sciences/National Research Councily.
- Heinz Center. 2002. Dam Decidons: Assessing Outcomes of Dion Removal. Heinz Center for Science. Economics, and the Environment. Washington. D.C., 221 p. (Graf as principal author and committee chair of the originating Heinz Panel on Environmental. Social, and Economic Outcomes of Oart Removal).
- National Research Council. 2002. Research Opportunities in Geography at the U.S. Geological Survey. Washington. D.C.: National Academy Press. Washington. D.C.: National Academy Press. 130 p. 4Graf as principal author and committee chair of the originating NRC Committee to Advise the U.S. Geological Survey on Research Priorities in Geography.
- Graf, W. L., ...... American Rivers: Environmental and Cultural History. In progress, 35% complete.

- 11. Graf, W. L. ..... Dam the Convequences: The Effects of Dams and American Rivers. In progress, 25% complete,
- PUBLICATIONS--REFEREED ARTICLES AND REFEREED BOOK CHAPTERS
- 14 Graf. W. L. 1970. The geomorphology of the glocial valley cross section. Arctic and Alpine Research 2:303-312.
- Gruf, W. L. 1971. Quantitative analysis of Pinedale Landforms, Beartooth Mountains, Montana and Wyoning. Arrive and Alpine Research 3:253-261.
- 3. Graf, W. L. 1975. A cumulative stream-ordering system. Geographical Analysis 7:35-40.
- 4. Graf. W. L. 1975. The impact of suburbanization on fluvial geomorphology. Water Resources Research 11:690-693,
- 5. Graf, W. L. 1976; Resources, the environment, and the American experience. Journal of Geography 75:28-40.
- Graf, W. L. 1976. Streams, slopes, and suburban development. Geographical Analysis 8:153-173.
- 7. Graf, W. L. 1976. Cinques as glacier locations. Arctic and Alpine Research 8:79-90.
- 8. Graf, W. L. 1977. The rate law in fluviul geomorphology. American Journal of Science 277:178-191-
- 9. Graf. W. L. 1977. Networks of suburbunizing streams. Water Resources Research 13:459-463.
- 10. Graf, W. L. 1977. The distribution of glaciers in the American Rocky Mountains. Journal of Glavlology 18:325-328.
- 11. Graf, W. L. 1978. The wild canyon of Ludore. National Parks and Conservation 53:4-9.
- Graf, W. L. 1978. Fluvial adjustments to the spread of tamarisk in the Colorado Platent region. Geological Society of America Bulletin 86:1491-1501.
- Gruf, W. L. 1928. A lei du razao em geomorfologia fluvial. Muticia Geomorphologica (Brazil) 18:27-39, reprinted and translated version of "The tate law in fluvial" grantorphology.
- 14. Graf, W. L. 1979. Development of montane arroyox and gullies. Earth Surface Processes

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- 28. Graf. W. L. 1983. Flood-related change in an arid-region river. Earth Surface Processes and Landforms 8:125-139.
- 29. Graf. W. L. 1983. Variability of sediment removal in a semi-arid watershed. Water Resources Research 19:643-652.
- 30. Graf, W. L. 1983. The arrayo problem: patchohydrology and paleohydraulics in the short term. In Gregory, K. J. ted.). Buckground to Paleoloydrology, London: John Wiley and
- 31. Gruf, W. L. 1983. Downstream changes in stream power in the Henry Mountains, Utali, Annuls of the Association of American Geographers 73:373-387.
- 32. Graf, W. L. 1984. The geography of American field geamorphology. Professional Geographer 36:78-82.
- Costa, J. E., and Graf, W. L. 1984. The geography of geomorphologists in the United States. Professional Geographer 36:82-89.
- Gruf, W. L. 1984. A probabilistic approach to the spatial assessment of river channel instability. Water Resources Resourch 20:953-962.
- 35. Graf, W. L. 1984. Landscape change in the canyons of the Green River, Utah and Colorado. Rational Geographic Society Research Reports 17:429-451.
- Graf, W. L. 1985. Geomorphologic measurements from ground-based photographs. In Fitty, A. F. (ed.). Themes in Geomorphology. London: Croume Helms Publishers, 211-222.
- Graf, W. L. 1985. Mercury transport in stream sediments of the Colorado Plateau. Annals
  of the Association of American Geographers 75:552-565.
- 38. Graf, W. L. 1986. Fluvial erosion and federal public policy in the Navujo Nation. Physical Geography 7:97-115.
- 39. Graf, W. L. 1987. Regional geomorphology of North America. In Graf, W. L. (ed.), Geomorphic Systems of North America, Boulder, Colorado: Geological Society of America, 1-5
- Graf, W. L. 1987. Geomorphological research in the Colorado Plateau. In Graf. W. L. (ed.). Geomorphia Systems of North America. Boulder. Colorado: Geological Society of America. 343-348.

- 15. Graf. W. L. 1979. Mining and channel response. Annals of the Association of American Geographers 69:362-275.
- Graf, W. L. 1979. Catastrophe theory as a model for change in fluvial systems. In Rhoads, D. D., and Williams, G. (eds.). Adjustments of the Fluvial System. Dubuque, Iowa: Kendall/Hum Publishers, 13-32
- Graf, W. L. 1979. Rapids in conyon rivers. Journal of Geology 87:533-551.
- 18. Graf. W. L. 1980. The effect of dam closure on downstream rapids. Water Resources Research 16:129-136.
- Graf, W. L., Trimble, S. W., Tay, T. J., and Costu, J. E. 1980. Geographic geomorphology in the eightics. Professional Geographics 32:379-284.
- 20. Graf, W. L. 1980. Riparion management: a flood control perspective. Journal of Soil and Water Conservation 15:158-161.
- 21. Grof, W. L. 1980. Fluvial processes in the lower Fremont River Baths. In Picard, M. D. (ed.), Heavy Mountains Symposium, Salt Lake City, Utah: Utah Geological Association, 177-183.
- 22. Gruf, W. L. 1980. On the rivers of Canyonlands. Sierra 65:60-64.
- 23. Graf. W. L. 1981. Channel instability in a braided sand-bed river. Water Resources
- Graf, W. L. 1982. Spatial variation of flavial processes in semi-arid lauds. In Thorne, C. E. ted.), Space and Time in Geomorphology, London: George Allen and Unwin Publishers, 193-217.
- 25. Graf, W. L. 1982. Tamarisk and river channel management. Environmental Management 6:283-296
- Graf, W. L. 1982. Distance theory and arroyo development in the Henry Mountains. Utals. American Journal of Science 282:1541-1554.
- Chung, H. H., Graf, W. L., Grissinger, E., H., Guy, H. P., Osterkamp, W. R., Parker, G.,
   Trimble, S. W., and Lane, L. J. 1982. Relationship between morphology of small streoms
   and sediment yield. *Journal of the Hydroulier Division of the American Noticity of Civil* Engineers (08/HY11):1328-1365.

#### WILLIAM L. GRAF

Page 13

- 41. Graf. W. L. 1987. Luie Holocene sediment storage in canyons of the Colorado Plateau. Geological Society of America Bulletin 99:261-271.
- 42. National Retearch Council, Committee to Review Glen Canyon Environmental Studies (W. L. Grof a committee member and general contributor; also audior of sections on use of scientific methods in river research, p. 25-8 and 33-453. 1987. River and David Management: A Review of the Ibreau of Reclamation's Cilen Cruyan Environmental Studies. Washington, D.C.: National Academy of Sciences Press
- 43. Graf, W. L. 1988. Definition of flood plains along und-region rivers. In Buker, V. R. Kochel, R. C., and Patton, P. C. (eds.), Flood Geomorphology, New York: John Wiley & Sons, 231-242.
- 44. Gra(AW, L. 1988, Science, engineering, and the low on western Sunbelt Rivers. Journal of Soil and Water Conservation 43:221-225.
- Gruf, W. J., 1988. Cutastroply: theory in fluvial geomerphology. In M. G. Anderson (ed.), Modelling Geomerhpological Systems, New York: John Wiley & Sons, 33-48.
- 46. Gmf, W. L. 1989. Holocene lucustrine deposits and sediment yield in Luke Canyon. Southeastern Utsly, National Geographic Research 5:140-160,
- 47. Graf, W. L. 1990. Pluvial dynamics of thanom-230 in the Prenco River, New Mexico. Annals of the Association of American Geographers 80:327-342.
- Graf, W. L., Clurk, S. A., Kanumerer, M. T., Lehman, T. W., Ramball, K., and Schroeder, R., 1991. Geomorphology of heavy metals in the sediments of Queen Creek. Arizona. USA, Carena 18:567-582.
- Graf, W. L., and Gober, P. 1992. Systems, potents, movements, and cycles. In Abler, R. F., Murcus, M. G., and Olton, J. M. (eds.), Geography's Inner World: Pervasive Thomas in American Geography, New Bruntwick, New Jersey. Rutgets University Press, 1996-19. 128-138.
- 50. Graf, W. L. 1992. Science, public policy, and Western American Rivers. Transactions of the Institute of British Geographers 17 n.s.:5-19.
- 51. Graf, W. L. 1993. The Grand Canyon Geographical Suite. In Janette, D. (ed.). Geographical Snapdiots of North America, Washington, D.C.: International Geographical Congress and Guilford Press, 137-140.
- 52. Graf, W. L. 1993. Lambscapes, commudities, and ecosystems: The relationship between policy and science for American rivers. In Sustaining Our Water Resources. Tenth

- Anniversary Symposium. Water Science and Technology Board, National Research Council, National Academy of Sciences Washington, O.C.: National Academy Press, 11-42.
- Graf, W. L. 1994. Planonium in river sediments of the monthern Rio Grande: The Los Alamos Contribution in Context. In Environmental Surveillance at Los Alamos Ouring 1992. Los Alamos, New Maxico: Los Alamos National Luboratory. p. 49-64.
- 54. National Research Council, Committee to Review Glen Canyon Environmental Studies / W. L. Graf a committee member and contributors. 1994. Review of the Draft Federal Long-Term Monitoring Plan for the Colorado River Below Glen Canyon Dam. Woshington. D.C.: National Research Council.
- National Research Council, Workshop on Criseria for Watershed Sustainability (W. L. Graf workshop chair and author of report). 1995. Criteria for Watershed Sustainability: Proceedings of a Workshop—Report to the President's Council on Sustainable Development. Washington, D.C.: National Research Council.
- National Research Council, Committee to Review Glen Cunyon Environmental Studies (W. L. Graf a committee member and general contributor; also author of Chapter 10. "The Institutional Context for Science," p. 186-208). 1996. Final Report, Glen Canyon Environmental Studies. Washington, D.C.; National Academy Press.
- Nutional Research Council, Rediscovering Geography Committees W. L. Graf a committee member and general contributors: also primary author of Chapter 6, "Geography's Contributions to Pulicy"s. 1996. Rediscovering Geography: New Relevance for a New Century. Washington, D.C.: Nutional Academy Press. Accepted and in press.
- Graf, W. L. 1996. Geomorphology and Policy for Restoration of Impounded American Rivers; What is "Natural?". In The Scientific Nature of Geomorphology, (B. L. Rhonds and C. R. Thom, eds.). New York: John Wiley and Sons, p. 443-473.
- Graf, W. L. 1996. Fluvial geomorphic analysis of plutonium-contuminated sediment transport and deposition in Los Alamos Canyon, New Mexico. Geological Society of America Bulletin 108:1342-1355.
- Graf, W. L. (with sidebars by Hirschboeck, K. K., Marston, R. A., Pitlick, J., and Schmidt, J.
  C.) 1997. Geomorphology for Western Water Policy. In Aquatio Ecosystems
  Symposium, A Report to the President's Western Water Policy Review Commission, ed.
  by W. L. Minckley, p. 1-13.
- Gruf, W. L. 1999. Dam nation: A geographic ocnsus of large American dams and their hydrologic impacts. Water Resources Research 35:1305-1311.

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#### WILLIAM L. GRAF

- Graf, W. L. 1975. The Impact of Suburbanization on the Stream-Channel Networks of Rulston Creek and South Branch, Inwa. Technical Report #32. Institute of Urban and Regional Research, University of Inwa, 34 p.
- Gruf, W. L. 1976. The Impact of Suburbanization on Stream Networks. Final Report #14, Institute of Urban and Regional Research, University of Iowa.
- Graf, W. L. 1977. Remote Sensing: Techniques for Environmental Analysis, Book Review. Geographical Analysis 9:303-305.
- 6. Graf, W. L. 1977. Measuring stream order, wreply. Geographical Analysis 9:431-433.
- Graf, W. L. 1979. Applied Geomorphology, Book Review. Earth Science Reviews 17:287-289.
- Graf, W. L. 1979. Potential Control Measures for Phreatophyrs in the Chaunels of the Sult and Gila Rivers, Anizona. U.S. Army Corps of Engineers. Phoenix Urban Study Office, Contract Report DACW09-79-0059, Phase I, 48 p.
- Graf, W. L. 1979. Introduction and Growth of Phreatophytes in the Channels of the Salt and Gila Rivers. Central Arizona. U.S. Anny Corps of Engineers, Phoenix Urban Study Office, Contract Report DACW09-79-0039. Phases II and III, 190 p.
- Graf, W. L. 1980. Channel Migration in the Gila River. Central Arizona. U.S. Army Corps of Engineers. Phoenix Urban Study Office. Contract Report DACW09-79-0059. Phase IV. 96 p.
- Graf, W. L. 1980. Acid Zone Settlement Planning, Book Review. Annals of the Association of American Geographers 70:605-607.
- Graf, W. L. 1981. Channel Changes in the Salt River. Phoenix Metropollius Area. Maricopa County. Arizotta. U.S. Army Corps of Engineers, Phoenix Urban Study Office. Contract Report DACW89-79-0059, Plane V. 100 p.
- Gmf, W. L. 1981. Process in Geomorphology. Book Review. Professional Geographer 33:150.
- 14. Graf. W. L. 1982. Soil Erosion, Book Review. Journal of Hydrology 55:376-377.
- Graf, W. L. 1982. Geomorphological Techniques. Book Review. Journal of Hydrology 56:390-397.
- 16. Graf. W. L. 1983. Recent Channel Changes on the Salt River, Phoenix and Tempe.

- 62. Graf, W. L. 2000. Locational probability for a dammed, urban stream: Salt River, Arizona. Environmental Management 25:321-335.
- Graf, W. L., Stromberg, J., and Vulentine, B. 2000. The Physical Context for the Recovery
  of the Southwestern Willow Flycucher, Hydrology, Geomorphology, and River
  Management. Recovery Plan, Southwestern Willow Flycatcher, U.S. Fish and Wildlife
  Service, Region 2, Albuquerque, New Mexico, p. 11-135.
- Graf, W. L. 2000. Physical integrity of managed rivers. In Review of Flood Protection Needs and Alternatives on the Lower Temptopue River Butin, Casta Rica, Fibadelia, Costa Rica., Office of Tropical Studies and the Heinz Center for Science, Beanomies, and the Environment, Washington, D.C., p. 35-39.
- Graf, W. L. 2001. Flovial Hydrology of Regulated Rivers in the Range of the Southwestern Willow Flycatcher. Revovery Plan. Southwestern Willow Flycatcher, U.S. Fish and Wildlife Service, Region 2. Albuquerque, New Mexico, p. 11–131.
- Graf, W. L., 2001. Diamage Control: Dams and the Physical Integrity of America's Rivers. Annals of the Association of American Geographers 91:1-27.
- Graf, W. L., 2001. La Integraided Física de Rios Bajo Manejo. In Lu Cuencu del Río Tempisque: Perspectivos pura un Manejo Integrado. J. A. Jiménez and E. Gouzález eds.. San José, Costa Rien: Organización para Estudios Tropicules, 96-102. [Reprinted and translated version of #64 above, "Physical Integrity of Managed Rivers."]
- 68. Graf, W. L., Stomberg, J., and Vulentine, B., ...... The theoral hydrologic and geomorphic context for the recovery of the endangered southwestern willow flycatcher. Invited paper, reviewed, under final revision, for simultaneous publication in the journal Geomorphology and the bonk Geomorphology in the Public Eye: Policy and Education; edit by P. Knutpfer.
- Golledge, R., Graf, W. L., and Cutter, S. L. ..... The Big Unanswered Questions in Geography. Professional Geographer, in press for summer, 2002.
- David, S., Graf, W. L., and Buish, S., ..... The Complex Decisionnuking Process for Removing Dams Environment, in press for summer, 2002.
- PUBLICATIONS--REVIEWS, REPORTS, AND OTHER NON-REFEREED ITEMS
- 1. Graf, W. L. 1974. Consensus and conflict in Quaternary research. Geotimes 19:20-21,
- Graf, W. L., 1975. Geomorphology: Davisian evolution to dynamic equilibrium. Geomines 39:24-27.

WILLIAM L. GRAF

Page 24

- Arizona, Contract Report, Goldstein, Kingsley, and Myers, Inc., Phnenis, Arizona, 38 μ.
- Graf, W. L. 1982. Sediment transport in the Pipeline Canyon/Puerco River. Church Rock. New Mexico. Contract Report for Lewis and Ruca, Inc. Phoenix. Arizana, 34 p.
- Gruf, W. L. 1982. Geomorphological Techniques, Bnok Review. Professional Geographer 34:367-368.
- Graf, W. L. 1982. Dynamics and Control of Phreatophytes Along the Upper Gila River. Southeast Arizona. U.S. Army Corps of Engineers, Phoenix Urban Study Office, Control Report DACW09-82-2524, 108 p.
- 20. Graf, W. L. 1982, The work of floods on Arizona Rivers. Arizona Weather World 9:1-2.
- Graf, W. L. 1983. A Probabilistic Approach to the Assessment of Emsion Damage Along an Unstable River. U.S. Army Corps of Engineers. Phoenix Urban Study Office, Contract Report CACW09-79-0059, Phase VI, 53 p.
- Andrews, J. T., and Graf, W. L. 1983. Quaternary Geology and Geomorphology. Continues 37:35.
- Graf, W. L. 1984. Review of the U.S. Geological Survey Plmeatophyte Project. U.S. Army Corps of Engineers. Phoenix Urban Study Office, Contract Report DACW09-83-M1-2623, 14 p.
- Graf, W. L. 1984. Review of Evaporranspiration/Water Salvage Research. U.S. Army Corps of Engineers, Phoenix Urban Study Office, Contract Report DACW09-83-M-2623, 16 p.
- Graf, W. L., 1984. Thinking Like a River: Reflections on the Gila. Arizona Waterline Summer 1984;1-4.
- Graf, W. L. 1984. Mega-Geomorphology. Book Review. Geographical Review 74:402-404.
- 27. Graf, W. L. 1985, Morphotectonics. Georimes 30(3):10-11.
- Graf, W. L. 1985. Applied Geomorphology: Geomorphological Survey for Environmental Development, Book Review. Sedimentary Geology 43:334-313.
- Graf, W. L., and Lee, J. A. 1985. Geomorphology. In Harris, C. D. ved.). Geographical Hibliography for American Cahearies. Washington. D.C.: Association of American

- Graf, W. L. 1985. Twenty-two entries for gennumbology and hydrology in Gondie, A. (ed.), Encyclopedic Dictionary of Physical Geography, London: Blackwell Publishers.
- Graf, W. L. 1985. Patterns of Erosion on the Navajo Indian Reservation. U.S. Department of Justice, U.S. Claims Court. Dockets 69 and 299, Defense Exhibit 900. 105 p.
- 32, Graf, W. L., 1986. Geomurphology Begins a Global Era. Geolines 33(3):15-16.
- Graf, W. L. 1986. Fluvial Erosion, Climate, and Grazing Management on the Fort Apache Indian Reservation. Artonia. U.S. Department of Justice, U.S. Claims Court, Ducket 22-H, Defense Exhibit A-1, 49 p.
- Graf, W. L. 1987. Predicted 100-Year Sediment Inflow to Laughlin Bay. Nevada. Sierra Delta Corporation Report, 15 p.
- Graf, W. L. 1988. Progress Report, Sediment Transport and Deposition of Radionuclides in the Rio Grande, 1943-1985. Environmental Surveillance Group. Los Alamos National Laboratory, 8 p.
- Graf, W. L. 1988. The State of the Rio GrandetRio Bravo. Book Review. Geographical Review 78:443-447.
- Graf, W. L. 1988. Channel Change Along the Northern Rin Grande, 1945-1988: Implications for Contaminant Transport. Environmental Surveillance Group. Los Alarms National Laboratory, 116 p.
- Graf, W. L. 1989. Photogrammetric Analysis in the Matter of Cotonnade Mall vs. Matriner Cardon et al. City Automoy's Office, City of Phoenix, Arizona, 34 p.
- 39. Graf. W. L. 1989. Luke Powell, Book Review. Journal of Geography 43:243-244.
- Graf, W. L. 1991. The Geomorphology of Platonium in the Northern Rin Grande. Environmental Surveillance Group, Los Alansos National Laboratory, 315 p.
- Committee on Glen Canyon Environmental Studies (Graf as writing author). 1991.
   Evaluation of Hydrology and Sediment Studies. National Academy of Sciences.
   National Research Council Report. Under review.
- Graf, W. L. 1992. Floods: Hydrotogical. Sedimentological, and Geomorphological. Book Review. Earth Science Reviews 32:204-205.

#### WILLIAM L. GRAF

#### Page 2

- 1970: Pinedale IV Stude Gluciation in the Southeastern Benttonth Mountains, Montana and Wyoming. American Quaternary Association, 1st Annual Meeting. Bozenam. Montana.
- 1974: Impact of Suburbanization on a Field of Holocene Sand Danes. American Quaternary Association. 3rd Annual Meeting. Mudison, Wisconsin.
- 1975: The Response of Flavial Systems to Suburbanization. Association of American Geographets, 71st Annual Meeting. Milwankee, Wisconsin.
- 1977: Geonorphic Impact of Changes in Riparius Vegetation in the Canyons of the Colorado Plateus. Association of American Geographers, 73rd Annual Meeting, Salt Lake City. Urds.
- 1977: Tunnarisk and Landscope Change in Capital Reef National Park. Capital Reef, Lake Powell, and Roinbow Bridge Field Conference. Association of American Geographers. 73rd Annual Meeting, Salt Luke City, Utah.
- 1978: Geomorphic Change and Recreation Management in Dinosaur National Monument, Utah/Colorado, Association of American Geographers, 74th Annual Meeting, New Orleans, Louisians.
- 1978: Channel Instability in Montane Watersheds. Workshop in Geomorphology, U.S. Department of Agriculture, Southwest Rangeland Watershed Research Center. Tucson, Adizona.
- 8, 1979: The Impact of Mining ou Montaine Stream Channels, Association of American Geographers, 75th Amuni Meeting, Philadelphia, Pennsylvania.
- 1979: Cutaurophe Theory as a Model for Change in Fluvial Systems. 10th Annual Geomerphology Symposium, Binghamton. New York.
- 1980: The Effect of Land Use Change on Fluvial Systems of the Berny Mountains, Utah. Association of American Geographers, 76th Annual Meeting, Louisville, Kentucky.
- 1980: Century-long Changes in the Flovial Systems of the Henry Mountains, Utah. Museum of Northern Arizona, 33rd Annual Symposium on Southwestern Geology, Flagstaff, Arizona.
- 1981: Channel Instability of the Gila River, Southern Arizona. Association of American Geographers, 77th Annual Meeting, Los Angeles, California.
- 13. 1981: Spatial Variation of Fluvial Processes in Senti-Arid Lands, 12th Annual

Page 26

- 43. Graf, W. L. 1993. Death in the Marsh, Book Review, Ecological Engineering, in press,
- Graf, W. L. 1993. Geomorphology of Platonion in the Rio Countle. Report LA-UR-93-1963. Los Alamos, New Mexico: Los Alamos National Laboratory, 375 p.
- Graf, W. L., Beyer, P. J., Rice, J. L., and Wasslewicz, T. 1994. Geomorphic Assersment
  of the Lower Gibe River. U.S. Army Corps of Engineers, Planning Section, Arizona
  Atra Office, Contract Report DACW09-94-0121. Phase 1, 145 p.
- Graf, W. L., Beyer, P. J., Rice, J. L., and Wasklewicz, T. 1994. Geomarphic Assexament of the Lower Salt River. U.S. Actusy Corps of Engineers, Planning Section, Arizona Area Office. Contract Report DACW09-94-0121. Phase II, 263 p.
- Coulkins, P., and Grof, W. L. 1995. Quaternary Geology and Geomorphology. Geotimes 55(3):7-8.
- Graf, W. L. 1995. Ecology and Management of Invasive Riverside Plants. Bank Review. Journal of Hydrology. in press. furthcoming.
- Graf, W. L., Beatty, S. W., Hirschloock, K. K., and Klink, K. M. 1995. Integrative Physical Geography and Ecology, Special Report, Association of American Geographers, 29 p.
- Graf, W. L. 1995. Fluvial Dynamics of Plutonium in the Los Alamos Conyon System. New Mexico, Contract Report 9-X38-28869-1. Environmental Protection Group, Los Alamos National Laboratory. 89 p.
- Graf, W. L. 1997. Changing Rivers, Book Review. Regulated Rivers: Research and Management 13:1-2.
- Gruf, W. L., and Randall, K. 1998. A Guidance Document for Munitoring and Assessing the Physical Integrity of Arizona Streams. Arizona Department of Environmental Quality, Contract Report 95-0137, 114 p.
- Ohmott, R. D., Myers, L. H., Graf, W. L., Hulley, M., Green, D., Brock, I., and Zisner, C. D., 1998. Rapid Assessment of Repartment: Arizona Department of Game and Fish, Contract Report G500078-C, 130 p.
- Graf, W. E., Guber, P., and Brazel, A. J. 2002. In Memorium, Melvin G. Marcus. 1929-1997. Annals of the Association of American Geographers 91:724-733.

#### ORAL PRESENTATIONS

#### WILLIAM L. GRAF

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Geomorphology Symposium, Urbana, Illinois,

- 14, 1981; Cainstruphe Theory is a Model for Geomorphologic Change, Geology Colloquium Series, University of Arizona, Tueson, Arizona.
- 1982: Variation of Fluvial Processes and the Mercury Pullution of Lake Powell. Association of American Geographers, 78th Annual Meeting, San Antonio, Texas.
- 1982: The Geomorphology of Deserts. Symposium on Desertification, Center for Quaternary Research, University of Washington, Seattle, Washington.
- 17. 1983: Fluvial Processes and Environmental Change in the Henry Mountains, Unda. Geography Colloquium Series, University of Culifornia, Los Angeles.
- 1983: Mercury in Stream Sediments of the Southern Colorado Plateau. Association of American Geographers, 79th Annual Meeting, Association of American Geographers, Denver, Colorado.
- 19. 1983: The Geography of American Field Geomorphology. Geological Society of America, 95th Annual Meeting, Indianapolis, Indiana.
- 1984: River Channel Changes in the Henry Mountains, Utah. U.S. Geological Survey. Invited Lecturer Series, Flagstaff, Artzona.
- 1983: Spatial and Temporal Patients of Sediment Transport and Storage in the Colorado Plateau Region. Association of American Geographers. 80th Annual Meeting. Washington. D.C.
- 22. 1984: The Pattern of Sediment Dynamics in the Upper Colorado River Busin. Geological Society of America, 96th Annual Meering, Reno Nevada.
- 1985: Temporal Variation of Sediment Yield in the Upper Colorado River Basin. Association of American Geographers. 81st Annual Meeting, Detroit, Michigan.
- 1985: Channel Processes and Sediment Yield in Arid-Region Drainage Basins. 1st International Conference on Geomorphology, Manchester, England.
- 1985: Sediment Yield and Heavy Metals in the Upper Colorado River Dasin, Distinguished Speaker Series, U.S. Militury Academy, West Point, New York.
- 1985; Managing Soubelt Rivers: Science, Engineering, and the Law in an Alien Environment. Soubelt Regional Conference, Miami, Florida.

- 1986: Climate, Grazing, and Sediment Yield in the Upper Colorado River Busin.
   Distinguished Lecturer Series, Department of Geography, University of California, Los
   Angeles.
- 1986: Sediment Processes in the Upper Colorado River Basin. Distinguished Speaker Series, U.S. Geological Survey. Denver. Colorado.
- 1986: Rates of Sediment Yield and Storage in the Colorado Plateau. Association of American Geographers, 82nd Annual Meeting. Minneapolis, Minneapola.
- 1986: Fluvial Erosion and Federal Public Policy in the Navajo Nation. Charles Alexander Symposium, Department of Geography. University of Illinois, Urbana, Illinois.
- 1986: Variation in Mercury and Sediment Yield from the Upper Colorado River Busin. Frontiers in Hydroxclence Seminar Series, Los Alamas National Luboratory, Los Alamas, New Mexico.
- 32. 1986: Cause and Effect of Twentieth-Century Erosion in the Upper Colorado River Busin, Geological Society of America, 98th Annual Meeting, Sun Antonio, Texas.
- 13. 1987: Erosional History of Lake Canyon, Southenstern Utah. Association of American Geographers, Portland, Oregon.
- 1987: Late Holocene Sedimentation in Lake Conyon, Southeastern Utah. Geological Society of America, 99th Annual Meeting, Phoenix, Arizona.
- 1987: Changing Climate, Sucred Cows, and the Colorado River. Symposium Series, Desert Institute, University of Arizona.
- 36. 1987: Climate, Cows, and the Colorado River. Visiting Speaker Series, Department of Geography, University of Wisconsin, Maulison.
- 1988: Southwestern Rivers: Delimiton of Flood Plains. Arizona Flood Plain Managers' Association. Annual Meeting. Luke Havasu City, Arizona.
- 1988: Downstream Distribution of Thorium-230 in the Puerco River, New Mexico Association of American Geographers, 84th Annual Meeting, Phoenix, Arizona.
- 1988: Fluvial Geomorphology of Radionuclides in the Puerco River, New Mexico. Geological Society of America, 100th Annual Meeting, Denver, Colorado.
- 40. 1989: Spatial Dynamics of Rudionaclides in Stream Systems. Visiting Speaker Series, Los Alamos National Laboratory. Los Alamos, New Mexico.

 1989. Riporian Ecosystems and Channel Change. Rio Grande, New Mexico. Association of American Geographers, Baltimore, Maryland.

- 1989: Heavy Metals in Southwestern Rivers. Visiting Scholars Program, Department of Earth Sciences, New Mexico State University, Las Cauces, New Mexico.
- 1089: Radionaclide Transport in the Puerco River, New Mexico. 2nd International Conference on Geomorphology, Frankfort. Federal Republic of Germany.
- 1989: Twentieth-Century Flood-Plain Development on the Rio Grande, New Mexico. Flood-Plain Symposium, University of Gottingen, Gottingen, Federal Republic of Germany.
- 1990: Plutonium Storuge and Flood-Plain Evolution, Northern Rio Grande, New Mexico. Association of American Geographers. 86th Annual Meeting, Toronto, Onfarto, Cumada.
- 1990: Fluvial Geomorphology of Plutonium Transport and Storage, Northern Rio Grande, New Mexico. Geological Society of America, 101st Annual Meeting, Dallas, Texus.
- I991: Geomorphology of Platonium in the Northern Rio Grande. Research Seminar Series. U.S. Department of Agriculture, Agricultural Research Service, Tucson, Alizona.
- 1991: A Framework for Analysis of Fluvial Responses to Quaternity Clinatic Change in the Desen Southwest. Geological Society of America. 102nd Annual Meeting, Sun Diego, California.
- 19. 1992: Science und Public Pulicy for Western American Rivers. Keynote Address, 1992
   Annual Meeting of the Institute of British Geographers, Swansen, Wales, United Kingdom.
- 1992: Geographic Distribution of Fleavy Metal Ratios and Concentrations in Queen Creek. Acizona. Association of American Geographers. 88th Annual Meeting. San Diego. California.
- 1992: Science. Policy, and Management for American Rivers. Maconokie Lecture, Department of Geography. University College London. London, England.
- 1992: Henry Metals and Radionuclides in the Rio Grande, New Mexico. Physical Geography Colloquium, University College London, London, England.
- 1992: Landscapes, Commodities, and Ecosystems: Policy and Science for American Rivers. National Research Council, National Academy of Science, 10th Analysis Symposium

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of the Water Science and Technology Board, Washington, D.C.

- 1993: Geomorphology of Plutonium in the Rio Graude System. Geological Society of America, 104th Annual Meeting, Buston, Massuchusetts.
- 55, 1993: Policy and Science for American Rivers. Atword Leoture, Clark University.
- 1993: How Representative is the American Wild and Scenic Rivers System? Opportunities for River Protection and Restoration. American Rivers Conference, Washington, D.C. (Paper presented by P. J. Beyer, April 5, 1993).
- 1994: Pulicy and Science for American Rivers. Brown Distinguished Lecture. McMaster University.
- 1994: First Approximation to a Platonium Budget, Northern Rio Grande, New Mexico, Association of American Geographers, 90th Annual Meeting, Sun Francisco, Coliforniu.
- 1994: Geoscience and Policy for Rivers. Thomas B. Nolan Distinguished Lecture 3, U.S. Geological Survey, Denver, Cularado.
- 1994: Geoschenge and Policy for Rivers. Thomas B. Nohm Distinguished Lecture 2, U.S. Geological Survey, Reston. Virginia.
- 1996: Dynamics of Plutonium in the Sediment System of Los Alamos Canyon, New Mexico. Astociation of American Geographers, 92nd Annual Meeting, Charlotte, North Carolina.
- 1996: Geomorphology of Plutonium in the Los Alamos Canyon System. Northern New Mexico. Geological Society of America 107th Annual Meeting. Denver, Colorado.
- 1996: Geomorphology and Policy for Restoration of Impounded American Rivers. Invited Paper for 17th Annual Geomorphology Symposium, Champaign, Illinois.
- 1997: The Implications of a Changing Physical Landscape for Western Water Policy. President's Western Water Policy Review Advisory Commission, Tempe, Arizona.
- 1991: Science and Policy for Restoration of American Rivers. R. J. Gregory Lecture. University of Southampton. United Kingdom.
- 1997: Restoring America's Rivers. Keynore Address, Great Plains -- Rucky Mountains Geographers (Association of American Geographers) Annual Meeting, Buzeman, Montana.

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- 1997: The Context of Human Impacts on Western Rivers: The Historical Geography of Doms. Geological Society of America 108th Annual Meeting, Salt Lake City, Utals.
- 1998: Resturing America's Rivers. Edward Tuaffe Invited Lecture, Ohio State University. Columbus, Ohio.
- 1998: The Impact of the Western Landscape on American Fluvial Geomorphology. Association of American Geographers 94th Annual Meeting, Boston, Massachussetts.
- 1998: Restoring America's Rivers, Horold Brown Invited Lecture, University of Minnesona, Minneupolis, Minnesona.
- 1998: GIS Analysis of Channel Changes in the Upper Rural Reach of the Salt River, Placents, Arizona. Arizona Geographic Information Conference, Phoenix, Arizona (J. M. Moreau, G. E. Morrisey, and W. L. Graf)
- 1998: The Impact of the Western Landscape on American River Science. Association of American Geographers. West Lakes Division Meeting. Keyante Address. Mudison. Wisconsin.
- 1998: The Impact of the Western Lundscape on American River Science. Association of American Geographers. East Lakes Division Meeting. Keynote Address. Madison. Wisconsin.
- 1998: The Impact of the Western Landscape on American River Science. Association of American Geographers. Fast Lakes Division Meeting. Keynole Address, Columbus. Ohio.
- [75] I998: The Impact of the Western Landscope on American River Science. Association of American Geographers. Southeast Division Meeting. Keynote Address. Memphis. Temessee.
- 1999: The Impact of the Western Landscape on American River Science. Historical and Cultural Geography, Visiting Speaker Series, University of Nevada, Reno.
- 1999: The Locational Probability of the Sait River, Arizona. Association of American Geographers 95th Annual Meeting, Honolulu, Hawaii.
- 1999: Restoration and River Mechanics. Imperial Irrigation and Drainoge District, Public Speaker Series for the New River Restoration. El Centro, California.
- 1909: Dain Nation: A Geographic Census of American Dams and Their Large-Scale Hydrologic Impacts. University of Colorado, Geography Collequium Series.

- 80, 1999; Dum Nation: A Geographic Census of American Dums and Their Large-Syale Hydrologic Impacts. University of California, Santa Barbara, Geography Colloquium
- 1909: Dam Nation: A Geographic Census of American Dunts and Their Lurge-Scule Hydrologic Impacts. Keynote Address. All Points of the Compass Day. University of Culifornia, Fullerton.
- 82. 1999; Danning America's Watersheds. Keynote Address. 2st International Conference on Multiple Objective Decision Support Systems for Land, Water, and Environment. Brisbanc, Australia,
- 83, 1999; Dains and their Impacts on American Rivers. Visiting Speakers Symposium, Department of Geography. University of South Carolina.
- 1999: The Fluvial Context of Recuvery of the Endungered Southwestern Willow Flycutcher. Invited Paper, 30th Annual Geomorphology Sympusium, Binghunton. New York.
- 85. 2000: Physical Integrity for Rivers. U.S. Fish and Wildlife Service, Ecological Services. Region 2, Albuquerque, New Mexico
- 2000: Dumage Control: Restoring the Physical Integrity of America's Rivers. Past President's Address, 96° Annual Meeting of the Association of American Geographers, Pittsburgh, Pennsylvania.
- 2000: Physical Integrity of Managed Givers. Review of Flood Protection Needs and Alternatives on the Lower Tempisque River Basin. Costa Rica. Fidulellin, Costa Rica.
- 88. 2000: Trends and Opportunities in Geographic Research. National Geographic Society, Committee on Research and Exploration, Washington, D.C.
- 2000: Physical Integrity of Rivers. Tempesque River Basin Conference, Office of Teopical Studies and Heinz Center for Economics, Society, and Environment, Filadelphia, Costa
- 2001: Process reversal for rivers: Flavial restoration by removal of dants, 97<sup>th</sup> Annual Meeting of the Association of American Geographers, New York, New York.
- 91. 2001: Darnage Control: Restoration of American Rivers. Departmental 75th Anniversary Distinguished Speaker, Syrucuse University, Syrucuse, New York.
- 92. 2001: Dam Decisions: Assessing Outcomes of Dam Removal. Coordinators Meeting. Electric Power Research Institute, Washington, D.C.

#### WILLIAM L. GRAF

 2002: Security of Dams: Science and Technology. Symposium on the Security of America's Water Supply. National Research Council. Water Science and Technology Board. Washington, D.C.

#### TEACHING

#### COURSES TAUGHT

At the University of lowa:

Weather and Climate Natural Hazards Natural Environment and Mun Notural Environmental Issues Environmental Impact Studies Alning Landforms Coustal Landforms

Arid Landforms Wilderness Issues Geographical Analysis Research Seminura Urbanization and Environment Pleistocene Environments Natural Resources

At Arizona State University:

Contemporary Geographic Thought Advanced Geographic Research Methods Landform Processes Introduction to Physical Geography Aerial Photographic Interpretation Wildemess Issues Public Land Policy Geographic Information Analysis Legal Aspects of Geology Fluvial Processes

River Management: Law and Science (Jointly with the College of Law) Physical Geography Research Seminurs: Geomorphic Processes Impact of High Dams Fluvial Processes Heavy Metals in Rivers Science and Policy for Impounded Rivers Geographic Information Analysis

At the University of South Caroling.

Physial Gromorphology Contemporary Approaches in Geography Geography of Public Lund and Water Pulicy Undorgraduate Capstone Course, Geography

GRADUATE ADVISING-THESES AND DISSERTATIONS SUPERVISED (Student, Year Completed, Title, First Post-Degree Appointment)

1. Olyphant, Greg A. 1979, PhD. Geomorphology and Micro-climatology of Cirque Busins.

#### WILLIAM L. GRAF

Page 35

- Blanca Mussif, Colorado. Assistont Professor, University of Maryland, College Park (Co-Advisor with Neil Sulisbury).
- 2. Smith Diane E. 1981. MA. Riputian Vegetation and Sedimentation in a Braided River. PhD Student, University of Wisconsin, Madison,
- Eurl, Richard A. 1982. PhD. Paleohydrology and Paleoclimatology of the Skunk Creek Busin During Holocene Time. Assistant Professor, New Mexico State University.
- Marcus, W. Andrew. 1983. MA. Copper Dispersion in Ephemeral Stream Sediments, Queen Creek, Arizona. PhD Student, University of Coforado, Boulder.
- Murcot, Lisa N. 1983. MA. The Spulial and Temporal Evolution of Tonto National Forest, Arizona. Resource Analyst and Paralegol Associate, Davis, Graham, and Stubbs.
- Alberhusky, JuEllen M. 1983. MA. Stormflow Analysis of Chapatral Conversion of a Small Arizona Watershed. Hydrologic Technician, U.S. Forest Service, Forestry Sciences Laboratory, Tempe, Arizona.
- Kidder, Stevett D. 1985. MA. Cirque Shape Variation in the Sierra Nevada, Colifornia Lecturer, U.S. Millitary Academy, West Point.
- Verville, Hethert J. 1985. MA. Channel Change, Process, and Cross Sectional Flow Distributions in an Arid-Region Braided River. Agua Fria River. Arizona. Resource Analyst. Applied Environmental Consultants, Inc., Phoenix.
- Rhoads, Bruce L. 1986. PhD. Process and Response in Desert Mountain Pluvial Systems. Assistant Professor, University of Illinois.
- Lucey, Michael J. 1987. MA. Role of Vegetation in Erosion and Sediment Yield. Central Arizona. Hydrologic Technician, Arizona Department of Water Resources. Phoenix.
- Lecce, Sont A. 1938. MA. Influence of Lithology on Alluvial Fan Morphometry, White and Injo Mountains. California and Nevada. PhD Student. University of Wisconsin.
- 12. Hatchenburger, Judith K. 1989. MA. Variation of Copper in Stream Sediments, Pinal Creek, Arizona, Research Project Manager, Department of Chemistry, Arizona State
- Lee, Stephen E. 1939. MA. The Effect of Glen Cutyon Dum on the Stubility of Rapids in the Colorado River, Grand Canyon. Arizona. Hydrologist. K-V Associates, Falmouth.

#### WILLIAM L. GRAF

Page 36

- 14. Lee, Jeffrey A. 1990. PhD. The Effect of Desert Shrubs on Sheer Stress from the Wind: An Exploratory Study. Assistant Professor, Texus Tech University.
- 15. Lehmun, Ted W. 1990. MA. Copper and Zinc in Sediments of Whitlow Ranch Reservoir. Queen Creek, Arizona. Hydrologist, Muricopu County Flood Coutrol District, Phoenix.
- Kammerer, Murtlu T. 1994. MA. In-Channel Dispersion of Copper, Zinc. and Lead in Sediments of a Dryland Stream, Queen Creek, Arizona. PhD student, University of Heidleburg, Germany
- Hetrick, John, S. 1992, M.A. Copper Variations in Suspended and Bed Sediments, Gila River, Arizona. PhD student, Arizona Stute University.
- 18. Hinchman, Virginia, H. 1993. MA, Riparian Vegetution and Alluvial Bur Deposits. Little Colorado River, Arizona. PhD student, Arizona State University.
- 19. Chin, Anne. 1994, PhD. Toward a Theory for Step-Pools in Mountain Streams. Assistant Professor, University of Oklahoma
- 20. Clark, Sandru L. 1995. PhD. Distribution of Selenium in the Upper Colorado River. Assistant Professor, Bridgewater State College (Massachusetts)
- 21. O'Hirok, Linda S. 1995. PhD. Geomorphology of Channel Junctions in Divland Streams. Assistant Professor, California State University at Los Angeles,
- 22. Wasklewicz, T. A. 1996. PhD. A Hydrogeomorphic Assessment of Middle-Elevation Riparian Vegetation, Sub Mogollon Rim, Central Arizona. Assistant Professor, Texas
- Freeland, C. 1997. MA. The Downstream Impacts of the Gillespie Dam Breach on the Lower Gla River. Geomorphologist, ASL Environmental Consulting, Inc.
- Heyer, P. J. 1997. PhD. Integration and Fragmentation in a Fluvial Geomorphi System. Verde River, Arizona. Assisstant Professor, State College of New York at Oneanta.
- Birkeland, K. W. 1997. PhD. Spatial and Temporal Variations in Snow Stability and Snowpack Conditions, Bridger Mountains, Montana. Avalanche Forecast Center, U.S. Forest Service, Bozeman, Montana.
- 26. Rice, J. W., Jr. 1997. PhD. Aqueous Sedimentary Basins on Mars. Mars Lander Team,

Arnes National Laboratory, San Francisco, California.

- Birkeland, V. Hinchman. 1999. PhD. Riparian Vegetation. Flood Power, and Channel Change in Conyons of the Escalante River Basin. Dah. Assistant Professor, Indiana University Western Field School. Bozeman, Montous.
- Kromer, S. J. 1999. MA. Functional Groups and Plant-Environment Relationships: Restoration Guidelines for the Pravo River, Utah. Hydrologist and Ecologist, Utah Reclamation, Mitigation, and Conservation Commission, Provo. Utah.
- 29. Murin C, Roberge. 1999. PhD. Physical Interactions Between Phoenix and The Salt River. Arizona. Assistant Professor. Tuwson State University, Battimore, Maryland.
- Molly M. Pohl. 1999. PhD. The Duns of the Elwhu River, Washington: Geomorphic Impacts and Policy Implications. Assistant Professor. Sun Diego State University. San Diege. California.
- Mark A. Fonstad. 2000. PhO. Spatio-Temporal Variation in the Power of Mountain Streams, Sangre de Cluisto Mountains, New Mexico and Colorado. Post-Doctorul Researcher, Mountain Research Center, Montana State University. Bozentain, Montana.

Graduate Student Advising at University of South Carolina, 2001-02

Patricia Bollus, beginning PhD

Taro Koman, beginning MA. Jason Julian, beginning MA, completing BA this year

Committee membership:

Edwin Chow, MA Junie Eusoz, MA Michelle Bergen, MA

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Geomorphology Iournal of Arid Environments

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Journal of Geology

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Geographer on Film Geographer on Pilin Expert, Arid Lands, National News Source Committee Organizer, Special Paper Sessions (7 Times) for Annual Meeting

Geological Society of America, Quaternary Geology and Geomorphology Division President, 1st Vice President, and 2nd Vice President in successive years Division Panel Member National Nominating Committee, Member Committee for the Centennial Volume, Geomorphology, Member, Chair Gladys Cole Award Panel, Member

American Society of Civil Engineers Task Committee on Morphology of Streams and Sediment Yield

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Invited Editor, Geomorphic Systems of North America, Centennial Volume on Geomotphology published by the Geological Society of America Editor, Discussion Paper Series, Department of Geography, University of Iowa Associate Editor, Annals of the Association of American Geographers Associate Editor, Frenferd Society of American Helicin Associate Editor, Professional Geographer Associate Editor, Professional Geographer Associate Editor, Professional and Engineering Geosciewer Editor for Geomorphology. A Geographic Bibliography for American Universities Consulting Editor, Adas of North America, National Geographic Society Consulting Editor, Ilistorical Adas of the University, National Geographic Society

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EXHIBIT #38

# ARIZONA CLIMATE

The University of Arizona

Ine)1885 Hundred 1985 Jeans

A Proud Beginning

THE FURST HUNDRED YEARS

Editors
WILLIAM D. SELLERS
RICHARD H. HILL
MARGARET SANDERSON-RAE

#### PREFACE

It is appropriate that a survey of the climate of Arizona during the past 100 years should be published in the same year that the University of Arizona system is celebrating its centennial. Much of what we know about the climate of the State has been documented in reports and books issued by the College of Agriculture and the Institute of Atmospheric Physics at the University of Arizona and, more recently, by the Laboratory of Climatology at Arizona State University, often with the cooperation of personnel of the U. S. Weather Bureau and the National Weather Service. The State's institutions of higher learning and our knowledge of the climate of Arizona have grown side by side.

Since the 1930s, a summary of the climate of Arizona has been published once a decade, beginning with the Arizona Agricultural Experiment Station Bulletins 130 (in 1930), 197 (in 1945), and 279 (in 1956) and ending with Arizona Climate (in 1964) and Arizona Climate 1931-1972 (in 1974). The latter two summaries were compiled by the staff of the Institute of Atmospheric Physics and aimed primarily at members of the research community. This updating of Arizona Climate should appeal primarily to the general public, although it is not without research applications.

The editors would like to express their thanks to the National Climatic Center in Asheville, North Carolina, for providing the data tapes from which most of the tables in this publication were derived, and to Dr. Anthony J. Brazel, the Arizona State Climatologist, for writing the section on statewide temperature and moisture trends in Arizona.

<sup>1</sup> Smith, H. V., 1956: "The Climate of Arizona." Ariz. Agr. Exp. Stn. Bull. 279.

Sellers, W. D., and R. H. Hill, 1974: <u>Arizona Climate</u>, 1931-1972. University of Arizona Press.

## 2. A Summary of Significant Weather Events in Arizona, 1884-1983

Location	Date	Killed	Injured	Storm Type
Yuma	02/0305/84	0	0	Flood
	Railroad tracks west of this place 2 days.	badly washed	out, causing delay of trains for	*
9	3 *	8		19
Prescott	02/06/84	0	0 *	Wind
	Wind attained a velocity of 46 mph trated.	. Many lari	ge trees in the vicinity were pros-	
Tucson	03/07/84	0	o	Rain, Flood
1 ucson	"Cloudburst" flooded streets to a de \$10,000.	epth of 4 fee	et, causing damage estimated at	1
		, Oc	•	S. S.
Yuma	03/10-15/84 Several miles of the Southern Pacif		0	Flood
± €	to have been washed away on the River broke through the levee and to vacate their homes, and numero to fall on the evening of the 12th. still under water. The damage sus at more than \$250,000.	10th. During flooded the us buildings On the 15	g the night of the 11th, the Gua town; many families were compelle were undermined. The river begar th: a large part of the town was	ď
	07/01-03/84	0	0	Flood
	Portions of the Southern Pacific rawashed away.	ilroad bridge	over the Colorado River were	
	25			
Prescott	08/09/84	0	0	Hail
	Hailstorm caused the destruction of	crops.		*/
	08/19/84	~ 0	0	Frost
3	A killing frost occurred 3.5 miles atton.	south of this	station, causing injury to vegeta-	
4 F	*			2
Maricopa	10/01/84	0	0	Sandstorm
×	During the morning the fresh wester dust. At times it was impossible of doors could breathe only with d covered with sand, and telegraph of the fine sand working into the bea	to see object ifficulty. E communicatio	s 15 paces distant, and persons of verything in the office building wan n was interfered with on account of	s

Location	Date	Killed	Injured	Storm Type			
Phoenix	08/12/60 Strong winds damaged 2 factories and ized by lightning strike.	0 several residenc	l res; young man hospital-	Wind; Lightning			
Dateland	09/04/60	0	11	Wind			
	Unusually strong winds collapsed a bun	khouse wall inju	ring 11 men.				
Salt River Valley	06/17/61 Strong winds accompanied by blowing to about Tolleson, with heaviest proper Phoenix. One man was killed in down widely scattered precipitation accompa	erty damage in t ntown Phoenix by	he western sections of	Wind			
Glendale	07/16/61	0	0	Lightning			
Area	A lightning-ignited fire destroyed an a tute of Foreign Trade.	partment buildin	g at the American Insti-				
Central,	07/22/61	0	0	Hail, Wind,			
Southern Arizona	Approximately 500 acres of cotton in the Magma-Queen Creek area and about 1,000 acres in the La Palma area were damaged or destroyed, primarily by hail. About 100 homes were also damaged near Coolidge. In Phoenix and Glendale, strong winds and heavy rains damaged residences, business establishments, and utilities. A possible tornado destroyed 2 hangars and damaged a number of aircraft at Deer Valley Airport. Funnel clouds were spotted near Eloy and southeast of Tucson. Several automobiles were washed down flooded arroyos in Phoenix and Tucson. In Tucson, heaviest damage was done in the suburbs, where many homes had roof and structural damage.						
Tucson	07/27/61	0	1	Possible			
es E	A severe thunderstorm accompanied by did about \$100,000 damage to homes, was heaviest in the Flecha Caida Esta completely destroyed. An 8-year-old debris.	streets and utili tes area, where	ties. Property damage at least one home was	Tornado, Hail, Rain			
Western	07/28/61	0	1	Wind, Rain			
Arizona	Strong winds demolished Highway Depar ripped roof from cafe, near Dateland, flooded Paradise Harbor, 7 miles north	injuring a woma	n. Heavy local rains				
Bisbee	07/31/61	0	0 %	Rain			
	Heavy rainfall flooded Brewery Gulch, caught in the flood waters.	causing damage	mainly to automobiles	sése			
Yucca	08/04/61	0	0	Wind			
	About \$50,000 damage to buildings at Proving Ground. Recording anemometed destroyed by wind.	the Ford Motor or registered 81	Company Arizona mph before being				
Tucson	08/22/61	0	0 .	Rain, Wind			
2	An unusually heavy rainstorm hit the T two inches of rain in I hour. The heavevere damage to roads and property. floods,	ivy runoff produc	ced by the storm caused	a v			

1961-1963			New 200 100 100 100 100 100 100 100 100 100	- A W DIT TO TO THE
Location	Date	Killed	Injured	Storm Typ
Phoenix	09/08/61	0	2	Severe Thunderstorn
Area	Several buildings and homes were tornado associated with a severe and moved northeast across town			o
Tuoren	12/08-17/61	0	0	Snow, Wind
Tucson Area	An unusually heavy snowstorm in damage, collapsing cabins and of ice, toppled many trees.	the Santa Catal ther structures.	lina Mountains did considerable Winds, combined with heavy	a E
Grand	06/28/62	0	2	Hailstorm :
Canyon	Hailstorm accompanied by heavy storm caught two hikers on uppe ing rocks, and the other receive large as 1.5 inches in diameter. In Grand Canyon Village and wa	ed numerous welt	s from hailstones which were as storm, hail covered the ground	ş i
Mana	07/27/62	0	11	Windstorm
Mesa	Strong winds associated with a Mesa motel. Eleven guests wer damaged by falling debris.	thunderstorm unree injured, and s	oofed several apartments at a everal parked automobiles were	
	09/07/62	0	, 0	Thunderstor
Tucson	A thunderstorm accompanied by about \$100,000 property damage Several roofs were removed by	strong winds, he . Most damage the wind and int	eavy rains and some hail caused was caused by strong winds. eriors damaged by heavy rain.	s = 3
± 0€	09/13/62	0	0	Rainstorm
Marana	Heavy rains caused approximate the latter mostly to cotton. F and also in some buildings in lo	1000 Marers ache	rty and \$10,000 crop damage, sited mud and debris in streets	
	09/13/62	1	0 **	Lightning
Elfrida	Man killed by lightning while to	alking on telepho	one.	
×	09/25~26/62	0	0	Thundersto
Pima & Pinal Counties	Severe thunderstorms in the Se damage to secondary roads. Es were about 4 to 6 inches for t River below Marana and the Se inundated cotton fields and cau	lls, Tucson, Mar timated precipita the 2-day period anta Rosa wash used damage to s was derived from	. Flooding along the Santa Cruin the Stanfield-Maricopa area secondary roads and soil erosion a dissipating tropical storm, attornal Manument on the 24th,	142
Statewid	01/13-15/63	0	0	Cold
Statewid	Cold, dry Arctic air entered to of the air mass did not arrive of 37 degrees below zero was	the State on the until the mornin reported at May	11th, but the coldest part g of the 13th, when a low erick in the White Mountains,	2

Storm Type Injured Killed Date Location breaking the previous all-time low record for Arizona. The lowest temper-Statewide atures on the 13th were accompanied by continuous winds, which meant (cont.) there was little or no temperature inversion. As a result, most agricultural areas were uniformly cold, and protective measures using wind machines and aircraft were generally ineffective. The Salt River Valley experienced considerable damage to citrus fruit, with limited and scattered damage to trees. Primary damage was to Valencia oranges and grapefruit. Maximum damage occurred in the South Mountain area and to the south of the Valley in Chandler Heights. Some damage was also reported to vege-table crops and to nursery stock. Crop damage in the Yuma area was relatively light. Private property damage was due largely to bursting water pipes and frozen automobile radiators and blocks. Utility damage consisted primarily of broken customer lines and frozen water meters. Wind, Rain, 07/22/63 Tucson Lightning Strong winds caused considerable damage to planes and hangars at Freeway Airport, where flying debris injured a boy. Flooding damaged automobiles, homes, and county roads. A lightning fire caused extensive damage to a drugstore. Thunderstorms 08/63 Statewide Thundershowers were unusually frequent and heavy over most of the State during this month. The most severe storms occurred between the 16th and 19th and were centered over the western end of the Salt River Valley and in the Prescott area. More than 10 inches of precipitation fell during the month at Bar T Bar Ranch, Blue, Crown King, Natural Bridge, Painted Canyon, Payson, Superior, Tonto Creek FH, and Young. The greatest amount was 13.09 inches at Crown King. The 11.03 inches recorded at Superior exceeds the maximum catch at that station during any month by almost 2.5 inches. Wind, Rain, Central 08/05/63 Hail Strong winds, associated with severe thunderstorms, damaged buildings and Arizona farm machinery in Eloy, planes at Marana Air Park, and roofs and power lines in Phoenix. Hail damaged cotton in Eloy. In Phoenix many roads were washed out and about 50 automobiles were damaged by flood waters. Wind, Rain, 08/13/63 Gila Bend Lightning Strong winds damaged roofs and flood waters entered houses. Lightning fire (5 mi W) destroyed 360 tons of hay. Rain, Wind 08/16-17/63 Central On the evening of the 16th, shortly after 9 pm, a thunderstorm moved into Arizona the Salt River Valley and intensified over the Glendale area, where it produced precipitation of very heavy intensity shortly before midnight, lasting into the early morning hours of the 17th. The Grand Canal overflowed its banks, flooding homes and business establishments in Glendale, Maryvale, and in northwest Phoenix. The Red Cross set up an emergency unit to aid familles driven from their homes by the flood waters. Two unofficial but reliable reports of more than 5 inches of precipitation were received for storm totals in the Glendale area. Heavy precipitation was also reported near Globe in the mountains bordering the east end of the Salt River Valley and in the Miller Valley area near Prescott, with considerable flooding of

homes and damage to highways.

Location	Date 1	Killed	Injured		Storm Typ
Prescott	08/19/63	0	0		Rain
× ×	With the soil still wet from the storm tation on the evening of the 19th prod flooding was particularly high in southwasewer lines so that about 75% of Preservaching the disposal plant. As a rest and heavy local damage, the Governor	uced rapid vest Prescot cott's sewag ult of the h	runoff. Damage due t. Floodwaters wa e was carried away azardous health situ	to flash shed out before lation	*
Dh	. 08/25/63	O	0		Wind, Rain
Phoenix Area	Strong winds unroofed buildings and da the storm in some localities, but nearly	maged utilit	les. Heavy rain acc e was caused by w	companied ind.	P P
Western	09/17/63	0	ε·· Ο		Rain
Arizona	Remnants of tropical storm "Katherine ing of the 17th, producing rainfall of property damage occurred in the Yuma measured in one hour at the Weather record for the station. Highways were caught in rising floodwaters and suffer and businesses were flooded. Cotton most of the fail lettuce crop had to be	locally heav area, when Bureau Airp washed ou ed severe wand alfalfa	ry intensity. The to re 2.04 inches of re ort Station, an all- it; many automobile vater damage. Mar fields were inundat	neaviest ain were time s were ny homes	
Phoenix	10/18/63	0	0		Rain, Wind
Area	A heavy rainstorm hit the Phoenix are continued into the early morning hours felled trees. Floodwaters invaded hon and caused considerable damage to roa	of the 19th nes and dam	h. Wind damaged he aged furnishings in	omes and	
Yuma	11/01/63	0	0		Hail
	Hallstones ranging in diameter from 1/ to airplanes and automobiles and some	4 to 7/8 inc damage to	ch caused property citrus trees.	damage	
SE and	07/14/64	1	0		Thunderstor
Central Arizona	Moderate to heavy thunderstorm activing in Tucson, Phoenix, and Wickenbuby wind. Heaviest property damage reburg. A cowboy and his horse were damage unknown but not heavy.	rg. Some o	famage to utilities Powderhouse Wash	near Wicken-	8
Jerome,	07/25/64	0	0		Thunderstor
Sedona	Nearly all damage in Jerome was caus of damage to highways and sidewalks. from roadways washed onto private pr Heavy rain and some hail damaged app	Due to hi operty and	lly nature of Jerom damaged homes and	e, debris	
Southeast	07/29/64	0	0		Thunderstor
Arizona	Moderately heavy thunderstorms scatted caused property damage in several toward Douglas. Lightning caused fire in home. Most of damage caused by floor	yns. Heavid n Catalina N	est damage reported Mountains, destroyir	in Lucson	

Location	Date	Killed	Injured	Storm Type
Flagstaff and NE Phoenix	07/30/64  Heavy rainfall associated with general mountains caused property damage to	homes, utilit	ties, and motor vehicles.	Rain
	Floodwaters caused considerable dame businesses, and motor vehicles in Yo	age to streets ungtown, Gle	ndale, and El Mirage.	
South-	07/31-08/01/64	0	. 0	Thunderstorms
Central Arizona	Thunderstorms caused damage over a Ajo. Most of damage in Tucson was ing. Considerable damage to farmlar Indians by floodwaters required airlif dozen small villages near Sells.	to homes and nd near Gila	Bend. Isolation of Papago	197
Southern	08/01/64	0	0	Rain, Wind
Arizona	Thunderstorm activity concentrated in central part of the State, causing he between Stanfield and Maricopa was and some damage to farmland. High Mesa. In the Douglas area, floodwa damaged roofs and utilities.	eavy local run flooded, caus wav damage v	noff. Most of the area sing damage to highways was also reported near	2 2 2
Carrala	08/04/64	0	1 .	Wind
South Phoenix	Strong winds associated with a thund in South Phoenix to homes and utilit debris. The storm then moved north where several aircraft were damaged	derstorm did o les. One wo westward ove	man was injured by flying	
Central	08/12/64	0	0	Thunderstorms
and NE Arizona	Scattered thunderstorm activity produced Most damage was water damage to produce to crops. Casa Grande, Florence and damage to homes, stores and highwar by heavy rains, with runoff from surface and patients were evacuated from Witraffic, as well as Santa Fe Railway	property, with nd Eloy were ys. Farther rrounding mou inslow Memori	heavily flooded, with most north, Winslow was drenched ntains increasing the flooding. al Hospital, and all highway	• *
Tucson	08/27/64	2	9	Tornado
(4 miles WSW)	Tornado moved through an Indian vil was the first tornado reported in the property damage, in terms of dollar of St. Francis. The historic Mission minor structural damage.	e State causir value, was t	o the convent of the nuns	a e
Tucson	09/06/64	0	3 3	Thunderstorm, Hail, Flash
	Thunderstorm with hail (marble size) overturned trailers, flooded some low Minor local citrus damage.	), over north w-lying homes	Tucson, washed out roads, s. Several minor injuries.	flood
Central	9/13-15/64	0 -	4	Thunderstorms
Arizona	Phoenix battered with hail, high wir Hundreds of city streets awash from drove palm fronds horizontal with sl	curb to curb	, as wind gusts to 61 mpn	Winds, Hail
				4

Black Canyon wash near Wickenburg 37.000 cfs from 28.5 mi2 U.S.

9/14/64

Location	Date	Killed	Injured	Stor	т Туре
Central Arizona (cont.)	the Santa Cruz broke out of swath of the channel near of trapped by a flash flood in wall of water sliced through	Green Valley. About to Sabino Canyon, northe	vo nunarea bicknicker	s were	×
Maricopa,	01/05-07/65	O	0	• Rain	
Pinal Counties	Heavy rains over a 3-day pr Maricopa County; runoff cau Highway at the Cactus Road	ised construction dama	cotton crop, primarily ge to the Black Cany	in von	ĕ
Tucson	01/20/65	0	2	Lightn	ing
2	Two workmen were injured they were removing Christm	when lightning struck as ornaments.	a 60-foot fir tree fro	om which	×
West	06/23/65	0 _	. 0	ain,	Hall
Phoenix	Flooding by heavy rains and loupes, other melons and co	pelting by hall cause otton. Strong winds ca	d heavy damage to ca used minor property o	inta- Mamage.	
Wahweap	06/23/65	0	0	<b>Wi</b> nd	т.
Wallin Cup	Winds reported up to 75 mi cabin cruiser, and damaged	les per hour smashed i 11 other boats in doc	netal marina, sank 26 king area on Lake Po	-foot well.	
Tucson	07/10/65	0	2	.Wind	. 2
7	Strong winds toppled house structural damage to city r	trailer, injuring occup eservoir.	ants. Wind also did		a
Buckeye	08/13/65	0	1	Wind	290
Such a second	Strong winds associated wit trailers and damaged roofs, trailer was injured.	h thunderstorm activit utilities and trees. C	y overturned several One woman in an over	house turned	
Harquahala	08/16/65	E 0	9	, Wind	
Valley	Wind overturned several tra sustained injuries. Addition crop damage in grape field	al property damage to	ine people, all of wh utilities and roofs. S	om Some	14
Western	12/08-18/65	0	0	Rain	
Central Arizona	Intermittent rain during thi harvesting of fruits and pla disease, damaged cotton co irrigation facilities, and dr	anting of lettuce and property in the lettuce and property	rains, increased plan	C C	51
Central,	12/19-31/65	0	0	Rain	, Snow
Southern Arizona	After the general precipital warming on the 20th throu into the Salt and Verde sy produced more snow in the southern part of the State east of Coolidge Dam. Filmelted much of the existing making necessary the release	gh 22nd produced show stems. Additional pre White Mountains and along the Santa Cruz nally, a warm rainstor	cipitation on the 23rd caused flooding in th River and along the m on the 30th and 3. Salt and Verde waters	e Gila Ist	8

	CONTRACTOR			With Inc. School States
Location	Date Ki	led In	jured	Storm Type
Central, Southern Arizona (cont.)	water late on the 30th into the Salt Rivstream. The result was the worst flood pletion of the reservoir system. All rose Mesa, Scottsdale and Phoenix areas were partially damaged, creating the worst to Damage to roads, utilities, farmlands, commanded and the santa Cruz River were flooded, and contaminating a number of wells in the the Santa Cruz and Rillito were damage the wettest December on record at a nu (6.96 inches), Tucson (7.27 inches), and greatest amount (16.32 inches) was reported.	in the Salt River discrepancy and the salt River de washed out, are affic jam in the rops, livestock, rizona, but adequersons from dangers of cotton and Rillito Creek rull Tucson area. See d and closed to mber of stations, and Nogales (7.98)	er Valley since com- river in the Tempe, and all bridges at least history of the State. homes and automobiles uate warning of the ger areas. In Pima grain land along uptured sewage lines, everal bridges over traffic. This was , including Prescott inches). The	
Green	07/18/66	0	0	Wind, Hail
Valley	Strong winds caused damage to property	. Hail damaged	cotton and pecans.	1.2
Warren	07/28/66	0	0	Tornado
W GLI CII	Small tornado followed skipping path fro unroofed, trees uprooted, windows broke accompanied by nearly continuous lightni	en and other prop	perty damaged. Storm	a
Globe	08/09/66	0	10	Tornado
#(4 )Q	Small tornado moved through two trailer Globe. One person injured seriously, or	courts in Ice Ho hers treated for	ouse Canyon south of cuts and bruises.	
Phoenix,	08/10/66	2	2	Wind, Rain
Tucson	In Phoenix, strong winds caused tree lin instantly, one occupant died later in ho the Santa Catalina Mountains caused cor recreation area.	spital. Heavy ru	notf from storm in	
Big Lake	08/16/66	2	1 . (2)	Lightning
	Lightning killed a mother and her daugh storm under a tree. The father, seated scious but recovered.	ter who were tal I near the pair,	king shelter from a was knocked uncon-	5
Phoenix	08/18/66	0	2 -	Rain, Wind
(near)	Unusually heavy rainfall caused heavy purposer Valley and southeastern Phoenix. overturned a house-trailer, injuring the	Strong winds acc	n Glendale, Tempe, companying the storm	.15
Elfrida	09/01/66	3	10	Lightning
(5 mi NE)	Lightning struck in the midst of 35 flel	d workers, killin	g 3, injuring 10.	
Phoenix	09/13/66	0 =	0	Rain
area	Heavy rains caused considerable property ways, and stores. Some damage to cot	damage to hom ton crop.	es, utilities, high-	

Location	Date	Killed	Injured	Storm Type
Cara	07/16/67	0	0	Tornado
Casa Grande (10 mi S)	Small tornado left about 50 perso Chu, south of Casa Grande. Her storm.	ns homeless in avy rain and ha	the Indian village of Chui If-inch hail accompanied the	
Wittman	07/29/67	0	0	Tornado
111	A small funnel cloud destroyed se to carports, house trailers, and t	everal houses. Itllities.	Additional property damage	§ §
Eastern	08/12/67	0	<b>O</b> %()	Rain
Arizona	Heavy rain began late on the IIt of the Gila and San Francisco Ri damaged roads, utilities, homes with heavy damage to fields, irri to both property and crops occur	and businesses.  gation canals a	Many farms were inundated, nd crops. Heaviest damage	e :
T also	08/14/67	0	2	Wind
Lake Havasu City	Strong winds caused severe dama Two men were injured when a ho able property damage was also co	mse tranfer ove	turned in the manual	*
Statewide	12/12-20/67	8	_ *	Snowstorm
above 2000 ft	During this 9-day period, some of history of the State brought wido orological standpoint, there were the State from December 12 throthrough the 20th. The heaviest northern, central, and eastern parea in the northeast. Because panying low temperatures, new many stations in those areas. If 102.7 inches of snow during the business structures were caved it damage was incurred by utilities some were trapped in the open on the Navajo Reservation in this region were isolated by up to be airlifted in. Precipitation excessive. At Crown King, 16 day. At some high-elevation stathe temperature did not rise about in the state of the same with the same high-elevation stathe temperature did not rise about in the same indight on the 22nd.	espread damage actually two wigh 16 and and snowfall occurrents of the Sta of the rapid ratecords for max lawley Lake in month. Many month weight and roads. Mand died of expended to 60 inches of amounts in the stops including the stops including the stops including the stops and died of the stops including the stops in the stops including the stops in the	main storms: one affecting other from late on the 17th red in the mountains in the te and on the high plateau ate of snowfall and the accommum snow depth were set at the White Mountains recorded homes, farm buildings, and to of the snow. Considerable any people were stranded and losure. All of the latter were part of the State. Parts of snow. Food and supplies had State during the month were recorded, 6.00 inches on one Flagstaff and Grand Canyon,	
Bullhead	05/03/68	0	0	Windstorm
City	Several mobile homes were destructed were badly damaged.	royed by strong	winds, and a number of other	
Statewide	06/68	٥	0	Cold, Heat
2	This was a month of temperatur at Alpine and Hawley Lake on on the 19th and 20th and at Githeir highest temperatures since the temperature got up to 125°	la Bend on the the extremely	21st. Many stations recorded	

## EXHIBIT #39

A HISTORY OF THE SALT RIVER CHANNEL IN THE VICINITY OF TEMPE, ARIZONA 1868-1969

> q

Paul F. Ruff Associate Professor of Engineering Arizona State University

## DREFACE

mesquite trees, and willow brush." One hundred years later, the area possesses little native vegetation, century, the river flowed continually and moved unrestricted in its valley. The land area immediately and a stream channel occupied by urban and industrial development. Only rarely does water flow in the constricted channel. The changes that occurred over the past century have resulted from the forces of The stream channel of the Salt River in the vicinity of Tempe, Arizona has changed significantly over bordering the Salt River near Tempe was described as "... swampy; and populated with cottonwood and the period from 1868 and the cadastral surveys of W. H. Ingalls to the present. In the nineteenth nature, and from the interferences of man. This report presents information as it concerns these changes in the alluvial channel of the Salt River.

aul F. Ruff

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	To Discharge Frequencies of the Salt River	at braffice Reef Dam	C-1: Magnitude of Maximum Flows,	מו פון דם עבפון חמש	C-2. Mean Daily Discharge below Granite Reaf Dam	
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location and/or geometry becomes of immediate concern. Such changes affect the water flow characteristics been of major interest and importance to society. In the arid and semiarid regions of the United States, the lands are being occupied by industry and urban developments. Prior to the occupancy of these lands, any change in the location of the stream channel or in its geometry was of little consequence. However, these level lands were first used for irrigation purposes because of their fertility, but more recently Stream channels and the lands that immediately border them (the flood plain) have traditionally with the occupancy of the channels and lands that immediately border them, and change in the channel's of the region, and may result in losses of life and property. The natural processes that occur in stream channel systems and the interrelations of the variables its channel boundaries. The Manning equation [1]\* establishes a relationship between these forces, the to move in a downhill direction, and the retarding or frictional force between water that is moving and internal and external forces. Two external forces of major importance are gravity, which causes water that govern these processes are extremely complex. Water flowing in a channel is subjected to both The relationship is: channel geometry and (material) composition, and the discharge.

$$Q = \frac{1.486}{n} AR^{2/3} S^{1/2}$$

where Q = volumetric flowrate or discharge, cubic ft per second, n = retardance factor empirically derived, ft1/6, A = cross-sectional area of the channel, square ft

R = A/P, ft. P =the wetted perimeter of the channel, ft. S = Slope of the channel bed.

<sup>]</sup> refer to the references listed at the end of this report. \*Numbers in [

slope. There is no unique interrelationship among these variables that produces a specific result. That movement of the sediment load carried by the water. The Manning equation for most situations adequately condition in the stream channel. Nevertheless, it must be recognized that man's time period of observais, more than one combination of these variables may exist to produce a specific result. The variables usually do interact, however, in a manner that creates a long-range state of equilibrium and/or cyclic versa. The principal variables to be considered in the analysis of stream flow in alluvial channels The behavior of an alluvial stream channel depends on the movement of the water, and on the satisfactorily describe the movement of sediment. The complexity of the problem can be appreciated discharge, sediment load, size(s) of sediment, flow resistance, velocity, channel width, depth, and describes the movement of the water. However, no equation or set of equations have been derived to the fact that the movement of the water is dependent on the mode of the sediment movement and vice tion is too short to accurately evaluate cause and effect relationships of nature  $ilde{ ilde{ idde{ idde{ ilde{ ilde{ ilde{ ide{ idde{ ilde{ ilde{\ilde{ ilde{ ilde{ ilde{ ilde{ ilde{ ilde{ ilde{\ilde{ ilde{\ilde{ ilde{\$ 

magnitude of "n" in the Manning equation. The configuration of an alluvial channel bed changes as the reached when the bed configuration is transformed from a plane boundary to one of sand waves; it is at The geology of a region determines the size, character, and amount of sediment transported in flowrate increases. During this period of changing bed forms, the resistance factor "n" is initially increasing, and the depth of flow is increasing with the increasing flowrate. However, a flowrate is stream. This sediment, in turn, determines the character of the channel (shape) boundaries, and the this transition that "n" begins to decrease. The depth of flow then begins to stabilize with the continuing increase in the flowrate [3].

Ġ. Examples of straight channels are rare. Even in so called "straight channels," the longitudinal path The longitudinal shape of a stream channel is also dependent on the character of the channel material, and it may assume many configurations that include straight, meander, and braided forms.

maximum depth tends to wander back and forth from one bank to the other. Sand bars in these channels are usually distributed from bank to bank, and opposite the path of maximum depth. Straight channels afford less resistance to flow than otherwise comparable braided or meandering channels. While examples straight channels are not common, the main path of the discharge during large flows is usually in relatively straight line down the valley.

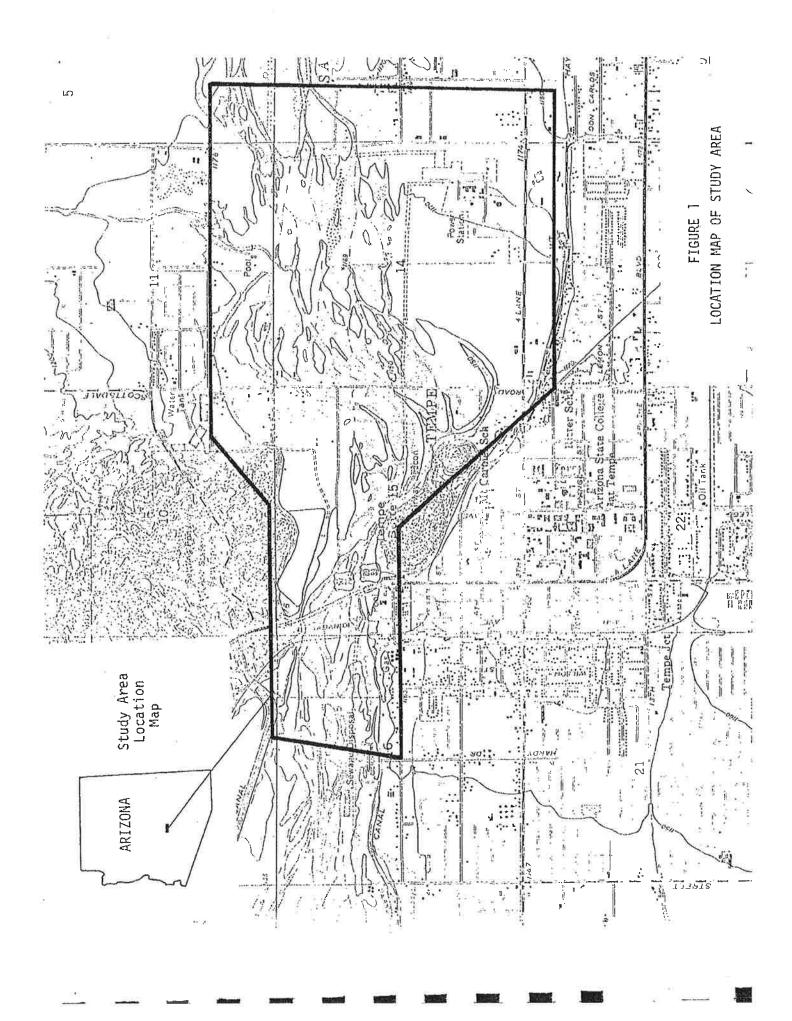
occurs when any channel is excessively wide for the amount of sediment that is available to be transported times; and the sediment would be deposited in the wide reach of the channel. The braided channel(s) that carries the largest part of the sediment load will usually aggrade until it carries only a small part of Many studies have been conducted in the laboratory and in the field to increase the engineer's knowledge widening of the channel, would decrease the sediment carrying capacity of the flow by eight to sixteen braided channel configurations. Meandering and braiding channels possess many similar characteristics the streamflow, and eventually the channel(s) is abandoned. Fluctuating discharges also contribute to of the mechanics of stream channel formation. These studies have not been conclusive. The prediction Braided channels are associated with aggradation, easily eroded (sandy) bank materials, rapid shifting of the bed sediments, and continuous shifting of the flow channels. A braided configuration by the water. The potential of a stream to transport sediment probably varies as the third or fourth stream, and braided channels develop on slopes that are steeper than those slopes producing meanders. power of the average velocity. A velocity reduction by a factor of two, for example, as caused by a In general, however, the channels of a braided stream are less sinuous than those of the meandering stream channel behavior today is more dependent on empiricism than on theoretical analysis.

# CHARACTERISTICS OF THE STUDY AREA

Small amounts of sediplains from which rise hills and isolated mountain ranges. The rocks that underlie the hills, ranges, manner that boulders, gravel, sand, silt and clay are indiscriminately mixed. The thickness of these sediments is known to exceed scores of feet. These sediments also exist in an ancient flood plain of The surface area drained by the Salt River is a series of broad, connected desert valleys and mentary rocks are also present. The valleys and plains are filled with poorly assorted alluvium and coarse sediments interbedded with silt and clay. These materials are deposited in such an irregular the Salt River that extends from the City of Mesa southward to Chandler and the Gila River. and valleys are composed of pre-Cambrian metamorphosed granites and volcanics.

tions, eliminated flows in the Salt River below the Granite Reef irrigation diversion dam (located about confluence with the Gila River west of Phoenix. The Verde River is the main tributary of the Salt River which it joins approximately 25 miles upstream from Phoenix. The Salt and Verde Rivers are perennial in water released downstream from the dams resulting from excessive rainfall or snowmelt that exceeds the The Salt River originates in the mountainous area of eastern Arizona and flows westward to its lowering of the groundwater table in the Central Valley of Arizona, have, for all practical consideraģ four miles downstream of the Salt and Verde River confluence). The flows that do occur are caused their headwaters. However, the construction of irrigation storage dams in the headwaters, and the available storage capacity of the reservoirs, or by summer precipitation.

The average slope of the Salt River from the headwaters to the mouth is 25 feet per mile, while the average slope from Granite Reef Dam (located 17 miles upstream from the study area) to the Gila River (located 22 miles downstream from the study area) is approximately nine feet per mile. the Salt River in the vicinity of Tempe, Arizona is about eight feet per mile.



Historical reference to flows extends from 1888 to the present. See Appendix C. Flows in excess February, 1891. Flows of major magnitude result from winter precipitation over the basin. The frequency of 100,000 cubic feet per second (cfs) occurred below the present site of Granite Reef Dam in 1890, 1891, reservoirs are full. These estimates are based on records of maximum flows for the 68-year period of 1893, 1905, 1910, 1919, and 1920. The greatest discharge of record was 300,000 cfs and occurred in of large flows has been determined by the Corps of Engineers under the assumption that all existing 1889-1957.

TABLE I. DISCHARGE FREQUENCIES OF THE SALT RIVER AT GRANITE REEF DAM [4]	T RIVER AT GRANITE REEF DAM [4]
	Maximum Flow
Number of Times (on the average) That a Flow would be Equaled or	Salt River at Granite Reef Dam Site
באכפפתפת זון וסט ופסו א	Cubic Feet per Second
0.6	290,000
	240,000
Ø	175,000
th.	108,000
30	000,89
15	50,0001
20	38,0002
25	25,0002
1Minimum damaging flow. <sup>2</sup> Estimate by others	by others.

Cadastral surveys made in 1868 of the study area of this report give some descriptions of the ลร as data from partial resurveys of the area, is in the files of the U.S. Bureau of Land Management, stream channel, the vegetation, and the soil types of the neighboring lands. This information, Phoenix, Arizona. Maps drawn from the cadastral surveys are also in the files of the U.S. Bureau of Land Management. Detailed topographic maps for 1903-04 and 1934-53 were obtained from the Salt River Project, Phoenix, Arizona. U.S. Geological Survey maps are also included in this report.

Early photographs, even prior to 1900, of the Salt River are in existence in private collections, flood Control District. However, the pictures are generally void of details--scenes of water destructhe Arizona Room of the Arizona State University Library, Phoenix newspapers, and the Maricopa County tion, ferry boats, and flows of water with no identifying landmarks, and so forth

The mode! study photo-Photographs for 1934 through 1949 were made available by the U.S. Department of Agriculture, Agricultural Stabilization and Conservation Service. The photographs for the period of 1954 through 1969 were obtained from Landis Aerial Surveys and Don Keller, Phoenix, Arizona. graphs were made by the author

Stream flow data of discharges at Granite Reef Dam were obtained from the files of the Salt River Project. The cross sections of the study area (1962) were drawn from detailed maps of the Maricopa County Borgo, Flood Control District. The cross sections of 1969 were surveyed and drawn by Mr. P. E. Professional Land Surveyor, Arizona State University.

## THE SALT RIVER, 1868-1969

1868

÷ The Salt River flows on two distinct channels as it crosses the present location of Scottsdale Road (section line between Sections 14 and 15). The south channel, designated as "Indian Slough," is approximately twice the width of the north channel, which is referred to as the "Salt River." Mr. W. between Sections 11 and 14 as, "...low and inclined to be swampy; with timber cottonwood along banks, Ingalls, responsible for the cadastral surveys of the region, describes the area along the boundary References: Appendix D; Figure A-1. and mesquite and willow brush."

1891

The banks of A flow of about 300,000 cubic feet per second (cfs) occurred--the largest flow to date (1971). the low flow channel(s) of a stream and the general configuration of the water's path are usually not the banks and configurations of large flows. It must be assumed that the geometry of the The area of land inundated by this flow has been estimated by the U.S. Geological Survey. References: Appendix D; Figure A-6. channel was materially changed by the 1891 flow.

1903-04

in 1868. The location of the south channel, along the boundary of Sections 14 and 15, has not noticeably Through the study area, the Salt River divides into two distinct channels farther eastward than boundary of Sections 13 and 14 (present location of Hayden Road), Indian Slough now occupies the single Slough. West of the study area the Salt River becomes a single channel, but in 1868 the river in this stream channel of 1868, while a south channel is located approximately 1/2 section southward of changed since the Ingall's survey; however, Indian Slough has moved somewhat southward. Figure A-2. Reference: region flowed in two widely separated channels.

## 1910

The Salt River (south channel) is in approximately the location of 1903-04, although major discharges did occur in 1893, 1905, and the early spring of 1910. Reference: Figure A-3.

### 1934

tance factor "n," if the channel is to convey the discharge. In the study region, sediment deposits are This reduction of slope must result in an increase of water depth, or in a decrease of the resis-This constriction in effect produces a gorge, and stream channels above gorges are notoriously unstable. constriction previously mentioned. The slope of the river channel decreases as it approaches the Tempe However, the plain is bordered by vegetation that delineates the low flow channel(s). In the 24-year period following the 1910 survey, only three discharges of major size occurred (1919, 1920, and 1927). relatively large volumes. The Salt River does not have the ability to move the sediment continuously In this region of the Salt River, the flow of water is pooled and the resulting decrease in the water the major cause of the channel bed instability, and the "n" value does change resulting from bed form A plain of sediments that is void of vegetation exists in the central part of the study area. change(s). The discharge moves faster in the regions where the "n" has been decreased; the depth of Reference: Appendix D, Plate 1. The channel area is unstable as it fills with sediments carried into the region by relatively small through the constriction [5]. A meander loop that has developed into Sections 10 and 11, and along conglomerate outcropping to the north is the cause of the variability in the channel(s) locations. The constriction of the Salt River channel as it passes the Tempe Butte and the velocity causes the sediments carried by the water to be deposited in the backwater area, and in their common boundary of Sections 14 and 15, is restrained from moving downstream by the channel eater in the channel and the bed slope remain relatively unchanged. flows of water,

1941

areas at the extreme particular discharge. Any number of factors could disturb this heterogeneous pattern of flow channels--A flow of 46,000 cfs occurred in the spring of 1941. Prior to this discharge there were flows (top of the meander loop) and south, and that lie between Sections 10-11 and 14-15, are mutually roadway cuts off these small channels and becomes a dominant factor in analyzing potential low stream Small channels The meandering channel (north) carries water and is the result of natural forces acting within the Salt River waters and its channel. The configuration to the extreme south is of unknown This area does lie in a direct line with the wash as it enters the river. References: Appendix D; The study area of the river is wide and shallow, which is typical of a stream channel configuration could be the result of high flows entering the Salt River from the Indian Bend Wash. iterally cover the study area, with each channel potentially representing the flow channel for a of 95,000 cfs in 1938 and 63,000 cfs in 1937. The meander loop noted in 1934 does not appear to As this channel fills, the stream shifts or example, Scottsdale Road which represents a low, compacted earth, and paved obstruction. noticeably changed its location, but the braided channel is more easily recognized than in This area could be the site of a historical meander loop for which no records aterally whenever there are no confining walls, and flows to lower adjacent ground. flow configurations; this is not true for large flows. The historical flow channel that is filling or is in the process of aggradation. Figure A-4; Plate 2. shotographs. exclusive. origin. north

1949

ocal inflows deposit their sediment loads almost immediately as the water infiltrates the channel bed. influence the (increased) rate of deposition. It should be noted that no (major) streams enter the The river channel is now a filling one with even moderate discharges so infrequent that any That is, the inflow is greater than the outflow from the area, and this streamflow depletion

15. The potential influence of this system of dikes was determined from a model study of the Salt River. Roadways have been constructed Salt River downstream from Granite Reef Dam. The water that has entered the channel during this time Few occupants are located in the channel area. However, an extensive dike system now exists in the northwest corner of Section period is primarily from overland flow resulting from local precipitation. Backwater effects and the displacement of flows southward were observed. References: Plate 3; Plates E-1 and -2; Appendix D. in the study area.

## 952-54

However, a continual shift of the river channel(s) in an erratic manner is of no concern until this opportunity to Gravel mining operations are also in Urban dwellers and industry have started to move into the channel area of the river. move is lost where people have encroached upon the channel area. References: Figure A-5; Plate 4. progress.

## 1957

Urban, industrial, gravel, and roadway developments continue to increase and occupy the river Reference: channel.

## 1958

...Sand and gravel companies have operated in the river bottom; subdivisions have encroached upon The channel of two thousand feet in width as delineated in the Corps the old original flood channels; a large sanitary fill has been built; and other types of work by man "Works of man have been such as to almost completely obliterate the original channel in many of Engineers report is considered advisable. At present, there is no defined channel. ...The whole hazards to life and property are great in this area. A narrow low-flow channel should be developed have tended to constrict or to obliterate the original channel. ...It must be pointed out that the river area should be rigidly zoned." Reference: Report of Flood Protection Improvement Committee (Maricopa County), Phoenix, Arizona, 1958. throughout the reach of the river.

1964

A comparison The operations and developments that have been noted previously continue to further expand in the channel. A sewage treatment plant lagoon and the accompanying outfall appurtenances have been of Plates 2 and 6 clearly shows that the treatment plant does indeed lie in the Salt River channel constructed immediately east of the confluence of the Indian Bend Wash and the Salt River. ဖ် Plate Reference:

1965-66

This facility also completely blocks any possible flows of the river in its (north) meandering enlarged and now occupies approximately 50 percent of the area normal to the flow of the entire river urbanized and industrialized. The sewage treatment plant facility observed in 1964 has been greatly occupancy of the Salt River channel. The Salt River Valley as well as the channel itself are being A study of Plates 2 through 7 shows the high rate of urban and industrial encroachment and Reference: Plate 7. channel. channel.

northwest direction, and after construction the flow was grossly diverted to the south. The high velocity plant lagoon and appurtenances, and the urban and industrial occupants west of the lagoons. It is also Dam [6]. The damages in the area of inundation were great. During this period of large discharge, and evident that these obstructions have curtailed or stopped the normal flow of the water in both a north and in the upper part of Section 15, north of the Tempe Butte, would have been incorporated into the channel plain by the developments in the northern portion of the channel, namely the sewage treatment and westerly direction. Without these deflectors and obstructions to the flow a greater area of the major flow channel. The influence of the sewage lagoons was further examined in a model study. The model studies showed that before the lagoons were constructed the flow in the area was in a west and In December-January, a discharge of 65,000 cfs occurred on the Salt River below Granite Reef accompanying high water velocities, the water course has been routed to the south part of the river

the tortuous path it is caused to assume by the developments. These developments are partly south as already noted, if this channel area had not been blocked to the east by the sewage treat-The retarding and inhibiting influence of the developments along Scottsdale Road part of the channel are clearly evident in Plates 8 and 9. The large degree of development--for example, houses, fences, major structures, and so forth--that deflected, in part, the normal appears that this area would have been a major flow channel if the discharge had not been diverted to flow during this large discharge is in a channel that lies north of the Tempe Butte and the existing course of the flow is shown in Plate 9. Also of interest in this photograph is the geometry of the esponsible for the relatively static body of water that exists in the north part of Section 15. Figure A-6; Plates 8 through 12; Plate E-3 References: plant lagoons and appurtenances. transmission towers.

that a large part of Scottsdale Road, north of the channel, was not removed by the discharge but remained large flow, and Plate 13, of the channel cut by the flow, afford a good study of the man-made encroach-The channel immediately after the 65,000 cfs flow bears slight resemblance to the channel of, an obstruction throughout the flow. A comparison of Plate 7, of the poorly defined channel before It is of interest to nents on a stream channel region and the results of the stream's efforts to reclaim its channel say, 1941. Little water has been allowed to flow in its historic channel. Reference:

1969

is now restricted to a 40-foot opening through this dike system. A model study of this construction shows Scottsdale Road, and the interceptor channel and accompanying protective dike for the City of Scottsdale's geometry of the severely constricted channel flow [7]. Material has also been placed immediately The encroachment on the river channel continues unabated. A dike system immediately east of large storm drain, are potentially dangerous obstructions to a large flow in the river.

material can increase the hydraulic efficiency of the river channel. An increased efficiency is caused north of the Arizona State University stadium. The model study of this work has indicated that this by the flow being directed in a straighter path than has previously been possible through the Tempe constriction. References: Plate 14; Plate E-4. A PICTORIAL STUDY OF THE SALT RIVER

1934-1969

## EXHIBIT #40

Item	No.	

### SCOTTSDALE CITY COUNCIL REPORT

To:

The Honorable Mayor and City Council

From:

Municipal Services Department / Capital Project Management

Meeting Date:

01/07/02



#### ITEM IN BRIEF

#### Action:

AUTHORIZE Engineering Services Contract No. 2002-001-COS with Malcolm Pirnie, Inc., in the amount of \$554,200 for Phase I of the design of Water Quality Improvements - Southern Neighborhoods.

Purpose:

This design contract will provide the pilot programming and construction documents to implement an advanced water treatment facility to improve drinking water quality in the southern neighborhoods of Scottsdale. The new facility will be located adjacent to the existing Central Groundwater Treatment Facility (CGTF) and Reservoir Site No. 80 (Reservoir 80) at the northeast corner of Thomas Road and 86th Street.

**Key Considerations:** 

Currently, the southern service area of the City receives drinking water from the City's Reservoir 80, which stores water from several sources: the CGTF, City Well #74, and SRP water treated by the City of Phoenix. The wells that currently feed the CGTF, (Wells 31,71,72 and 75A) have been experiencing elevated levels of nitrates, total hardness and total dissolved solids; which have contributed to making the CGTF water scale forming. In addition to the high scaling potential, the water from the CGTF wells has nitrate concentrations that, while still in compliance with federal and state water quality standards, require the wells to be operated according to a stringent blending plan. New arsenic standards will further impact the management of future water quality. Therefore, in order to continue to provide acceptable quality drinking water to citizens and maintain the CGTF as a valuable potable water supply, additional water treatment is required.

The City's 2001 Integrated Water Master Plan evaluated three treatment options to address the CGTF water quality issues. Based upon the results of this evaluation, the most cost-effective solution for water quality enhancement in this service area appears to be implementation of nanofiltration (NF)/low-pressure reverse osmosis (LPRO) processes on a portion (approximately 30%) of the treated water at the CGTF. This highly purified water would then be blended into the remaining CGTF water; thereby reducing hardness, total dissolved solids, nitrates and arsenic to acceptable levels.

The improvements recommended by the master plan consist primarily of the following major components:

- 12 million gallons per day (mgd) of sand separation (hydrocyclone) capacity to remove sand and silt from source well water
- New vertical turbine pumps for the CGTF clearwell
- NF/LPRO membrane system with approximately 4 mgd capacity (and associated chemical feed systems),

- Approximately 7,000 square foot treatment building to house membrane units, chemical feed systems, brine pumping station, process control equipment, and office; and
- Acquisition of approximately 2 acres of vacant land adjacent to the current CGTF site

Initial contact with the property owner of the vacant land has occurred and the property owner has expressed a willingness to seriously consider the acquisition.

This contract is divided into two phases:

- Phase I consists of a pilot program to validate the effectiveness of the membrane systems and the appropriate blending ratio to ensure achievement of the City's water quality goals. Also included is a concept design to identify site selection, sewer disposal options for process residual water, facility and equipment design criteria, and architectural and landscaping concepts. Public outreach and application for a municipal use permit would conclude Phase I tasks.
- Phase II would involve detailed design of the facility, continued public outreach, production of construction documents for public bidding, and bidding phase assistance. Because the level of consultant's design effort in Phase II is dependent on the results obtained from Phase I, a contract amendment would be defined and priced at the conclusion of Phase I and presented to City Council for its consideration.

Phase I is expected to be completed in approximately five months. Phase II would require an additional seven months. Construction could begin in spring of 2003 and be completed within one year.

#### Staff Contact:

Alison Boldt, Project Manager, (480) 312-7985, aboldt@ci.scottsdale.az.us

#### DISCUSSION

Background/History:

In 1981, trichloroethylene (TCE) and trace amounts of other industrial chemicals were found in two of Scottsdale's drinking water wells, which were immediately shut down. The US Environmental Protection Agency (EPA) identified three companies as potentially causing the contamination and determined that a long-term cleanup effort would be required.

The North Indian Bend Wash Central Groundwater Treatment Facility (CGTF), located at Thomas Road and 86th Street, was constructed in 1994 by the three companies deemed potentially responsible for contaminating the groundwater. The facility is owned and operated by the City of Scottsdale

The treatment facility uses a process that "strips" the water of contaminants by mixing it with air as the water flows down through three treatment columns. As the air and water mix, the contaminants attach themselves to the air, which is cleansed by activated carbon filters before release to the atmosphere.

The CGTF is supplied by water pumped from four wells, which contain TCE. The facility treats the well water to federal and state drinking water standards, under the oversight of the EPA, the Arizona Department of Environmental Quality, and Maricopa County. Treated water from the

CGTF is supplemented by other water supplies containing no TCE and provides safe drinking water to the southern neighborhoods of Scottsdale.

Treated water from the CGTF is sampled daily and the facility has proven successful at removing TCE from well water. The treated well water, although safe for drinking, does contain elevated levels of hardness and total dissolved solids, causing scaling within the distribution system and household pipelines. These continuing scaling issues, along with federal regulations addressing maximum levels of nitrates and arsenic in well water, were considered in depth by the 2001 Integrated Water Master Plan. Those planning efforts have recommended an additional treatment process, which appears capable of addressing all four water quality issues in a cost-effective manner. This design contract represents the next step in implementing the recommended improvements to the water quality in the City's southern service areas.

On August 3, 2001, Capital Project Management staff solicited proposals for a design contract from 71 engineering consultants. Six proposals were received on August 30, 2001. All proposals were thoroughly evaluated by a panel of four City staff members and two firms were short-listed for follow-up interviews. Based upon the results of the interviews, Malcolm Pirnie, Inc. was selected for contract negotiations. The Purchasing Director confirms that the procurement procedures provided by the City Code have been followed. The C.I.P. Coordinator concurs that funds are available to authorize this contract.

On October 15, 2001, City Council approved the 2001 Integrated Water Master Plan. This master plan recommended the implementation of advanced water treatment utilizing nanofiltration (NF) or low-pressure reverse osmosis (LPRO) downstream of the CGTF to address existing water quality issues.

Community Impact:

This project will improve existing water quality in the southern service areas of the City that receive drinking water from the CGTF by eliminating scaling caused by water hardness and total dissolved solids. The project will also ensure compliance with pending Federal regulations regarding maximum levels of arsenic and nitrates in drinking water. The project team will solicit comments from neighboring residents during the design phase to improve the aesthetics of the existing vacant parcel through building setbacks, buffering and landscaping.

Financial Impact:

Funds for this contract are available in CIP Account No. 602-W0205 (Water Quality Improvements - Southern Neighborhoods). This account is funded by a combination of water rates and water development fees.

Community Involvement:

Two public meetings, which discussed this project, were conducted in October prior to City Council approval of the 2001 Integrated Water Master Plan. Additionally, in December 2001, informational flyers were sent to residents in the service area of this project. A public open house was conducted on December 19, 2001, and future work groups will be conducted with adjacent residents. Periodically throughout the project, informational flyers will be distributed to update citizens within the service area regarding the project status. Public hearings will also be conducted as part of the Municipal Use Permit and Development Review Board processes.

Options and Alternatives:

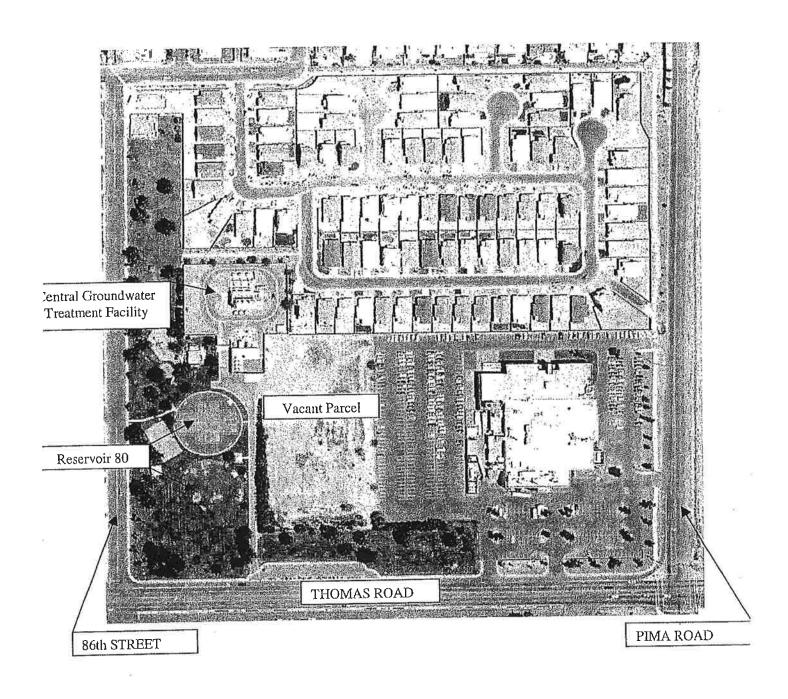
The master planning process identified three advanced treatment alternatives. This effort indicated that the NF/LPRO alternative would provide a complete solution to all four inorganic water quality issues at the CGTF. Not proceeding with this design contract will result in limiting the City's ability to improve the existing quality of drinking water for the citizens of the southern neighborhoods. Alternatively, the City's proactive approach by proceeding with this project will benefit citizens by improving existing water quality and will maintain CGTF water as an acceptable potable water source.

Roger Klingler Alison Boldt, Project Manager Assistant City Manager Report Author David M. Mansfield Alvis T. Dreska General Manager, Water Resources General Manager, Municipal Services

Attachments:

1) Project Location Map

2) Engineering Services Contract No. 2002-001-COS



Water Quality Improvements – Southern Neighborhoods
Project Location Map
Attachment No. 1

EXHIBIT #41

## CITY COUNCIL REPORT



MEETING DATE:

ITEM NO.

GOAL: Coordinate Planning to Balance Infrastructure

**SUBJECT** 

Contract Modification for Phase II Design of the Water Quality Improvements – Southern Neighborhoods Project.

REQUEST

AUTHORIZE Contract Modification to Engineering Services Contract No. 2002-001-COS-A with Malcolm Pirnie, Inc., in the amount of \$955,582.00 for Phase II of the design of Water Quality Improvements - Southern Neighborhoods.

Related Policies; References: Engineering Services Contract No. 2002-001-COS, Phase I, with Malcolm Pirnie, Inc., approved by City Council on January 7, 2002

BACKGROUND

The 2001 Water Resources Master Plan identified the goal to improve the quality of drinking water provided to citizens in the general area south of Indian School Road. Although the drinking water is currently meeting or surpassing all public health standards, this project will reduce the total water hardness and scaling potential, which exists within the distribution system.

This contract modification will provide the final design and construction documents to implement an advanced water treatment facility to improve drinking water quality in the southern neighborhoods of Scottsdale. The new facility will be located adjacent to the existing Central Groundwater Treatment Facility (CGTF) and Reservoir Site No. 80 (Reservoir 80) at the northeast corner of Thomas Road and 86<sup>th</sup> Street.

Currently, the southern service area of the City receives drinking water from the City's Reservoir 80, which stores water from several sources: the CGTF, City Well #74, and SRP water treated by the City of Phoenix. The wells that currently feed the CGTF, (Wells 31,71,72 and 75A) have been experiencing elevated levels of nitrates, total hardness and total dissolved solids; which have contributed to making the CGTF water scale forming. In addition to the high scaling potential the water from the CGTF wells has nitrate concentrations that, while still in compliance with federal and state water quality standards, require the wells to be operated according to a stringent blending plan. New arsenic standards will furthe impact the management of future water quality. Therefore, in order to continue to provide acceptable quality drinking water to citizens and maintain the CGTF as valuable potable water supply, additional water treatment is required.

The City's 2001 Integrated Water Master Plan evaluated three treatment options to address the CGTF water quality issues. Based upon the results of this evaluation, the most cost-effective solution for water quality enhancement in this service area

appears to be implementation of low-pressure reverse osmosis (LPRO) processes on a portion (approximately 30%) of the treated water at the CGTF. This highly purified water would then be blended into the remaining CGTF water; thereby reducing hardness, total dissolved solids, nitrates and arsenic to acceptable levels. The initial phase of this contract, the piloting and preliminary design, further validated and developed the reverse osmosis concept recommended by the master plan.

This contract is divided into two phases:

- Phase I, which has recently been completed, consisted of a pilot program to validate the effectiveness of the reverse osmosis membrane systems and the appropriate blending ratio to ensure achievement of the City's water quality goals. This process also identified several pretreatment issues, which will be considered during final design. Also included was the concept design to identify site layout, sewer disposal options for process residual water, facility and equipment design criteria, and architectural and landscaping concepts. Public outreach and application for a municipal use permit are currently occurring and will conclude the Phase I tasks.
- Phase II will involve detailed design of the facility, continued public outreach, production of construction documents for public bidding, and bidding phase assistance. Because the level of consultant's design effort in Phase II was dependent on the results obtained from Phase I, this contract modification was defined and priced at the conclusion of Phase I and is now presented to City Council for its consideration.

The concept design developed during Phase I has identified the following major components for the new RO treatment plant:

- New vertical turbine pumps for the CGTF clearwell
- RO membrane system with 4 mgd of permeate capacity (and associated chemical feed systems),
- Approximately 11,000 square foot treatment building to house membrane units, chemical feed systems, brine pumping station, process control equipment, and office,
- Approximately 5,000 linear feet of 12-inch concentrate disposal sewer line from the new RO plant, west in Thomas Road to an existing interceptor sewer in Hayden Road, and,
- Acquisition of approximately 2.5 acres of vacant land adjacent to the current CGTF site

This contract modification for the Phase II final design represents the next step in implementing the recommended improvements to the water quality in the City's southern service areas. Phase II is expected to be completed in approximately nine months. Construction could begin in early 2004 and be completed within one year

Recent staff action. On October 15, 2001, City Council approved the 2001 Integrated Water Master Plan. This master plan recommended the implementation of advanced water treatment utilizing nanofiltration (NF) or low-pressure reverse osmosis (LPRO) downstream of the CGTF to address existing water quality issues

On January 7, 2002, City Council approved engineering services contract 2002-001-COS with Malcolm Pirnie for the Phase I design of the Water Quality

Analysis & Assessment

Improvements – Southern Neighborhoods. Negotiations resulted in a contract structure with two phases: one for process piloting and concept design, the second for final design.

Contract process and terms. Engineering services contract 2002-001-COS includes the provisions for this contract modification for the Phase II final design, subject to City Council authorization.

Community involvement. This project will improve existing water quality in the southern service areas of the City that receive drinking water from the CGTF by reducing scaling caused by water hardness and total dissolved solids. The project will also ensure compliance with pending Federal regulations regarding maximum levels of arsenic and nitrates in drinking water. The project team will solicit comments from neighboring residents during the design phase to improve the aesthetics of the existing vacant parcel through building setbacks, buffering and landscaping.

Two public meetings, which discussed this project, were conducted in October 2001 prior to City Council approval of the 2001 Integrated Water Master Plan. Additionally, in December 2001, informational flyers were sent to residents in the service area of this project. A public open house was conducted on December 19, 2001, and future work groups will be conducted with adjacent residents. Periodically throughout the project, informational flyers will be distributed to update citizens within the service area regarding the project status. Public hearings will also be conducted as part of the Municipal Use Permit and Development Review Board processes.

#### RESOURCE IMPACTS

Available funding. Funds for this contract are available in CIP Account No. 602-W0205 (Water Quality Improvements – Southern Neighborhoods). This account is funded by a combination of water rates and water development fees.

Future budget implications. The estimated future construction cost of this project is \$7 million. The estimated land acquisition cost is \$1 million.

## OPTIONS & STAFF RECOMMENDATION

Description of Option A: Authorize the contract modification for the Phase II design of this project. Proactively proceeding with this contract modification will benefit citizens by improving existing water quality and will maintain CGTF water as an acceptable potable water source. The master planning process and the Phase I design of this project have identified that RO will provide a complete solution to the inorganic water quality issues in the southern areas of Scottsdale.

Description of Option B: Do not authorize the contract modification for the Phase II final design of this project. An alternative to proceeding with this Contract Modification would be to solicit Requests for Proposals and repeat the entire selection process. This will result in improvement delays to the water quality in the southern service area, which has already been identified for improvement by the master plan. This would also create a time delay to redress the design expectations to the successful applicant. Re-advertisement would also create a cos increase to the project.

**Description of Option C:** Do not proceed with the Phase II final design of this project. Not proceeding with this design contract will result in limiting the City's ability to improve the existing quality of drinking water for the citizens of the southern neighborhoods.

Recommended Approach: Staff recommends Option A. The authorization of this contract modification will benefit citizens by improving existing water quality and will maintain CGTF water as an acceptable potable water source. The authorization of a contract modification is also more time and cost efficient than re-soliciting engineers for the final design.

**Proposed Next Steps:** If this action is approved, final design will start immediately and be completed by August 2003.

RESPONSIBLE DEPT(S)

Capital Project Management and Water Resources

STAFF CONTACT(S)

Alison Boldt, Sr. Project Manager, (480)312-7985, aboldt@ci.scottsdale.az.us

APPROVED BY

Alvis Dreska

Date

Municipal Service General Manager

adreska@ci.scottsdale.az.us, (480)312-5555

Roger Klingler

Date

Assistant City Manager

rklingler@ci.scottsdale.az.us, (480)312-5830

**ATTACHMENTS** 

1. Project Location Map

2. Contract Modification to Engineering Services Contract 2002-001-COS-A

#### **APPENDIX C**

## Written Departmental Replies to Notice Letter Responses



## Arizona Department of Environmental Quality



#### **DELIVERED VIA EMAIL**

August 6, 2015

RPU16-018

Steven B. Bennett Deputy City Attorney Scottsdale City Attorney's Office 3939 N. Drinkwater Blvd. Scottsdale, AZ 85251

Re: Notice Letter Pursuant to A.R.S. § 49-287.04

Estes Landfill WQARF Registry Site, Phoenix, Arizona

Dear Mr. Bennett,

Thank you for the May 4, 2015 City of Scottsdale's response to ADEQ's A.R.S. § 49-287.04 Notice Letter. ADEQ has not yet issued its final allocation report under A.R.S. § 49-287.05. The allocation process is set forth in A.R.S. § 49-287.05 and A.R.S. § 49-287.06. Once the final allocation report is complete, all PRPs will be notified of their liability. Those parties who wish to challenge the allocation, may do so at that time. ADEQ does not anticipate the final allocation report being available for at least 2 months.

City of Scottsdale appears to be requesting further documents relative to ADEQ's determinations of liability at the Estes Landfill Site and it may do so pursuant to Arizona's public records law, A.R.S. § 39-121.

ADEQ has also reviewed the documents produced pursuant to the public records request of the City of Scottsdale and can verify that all responsive non-privileged documents were produced. ADEQ's file numbering scheme does not follow a strict incremental numbering methodology therefore gaps may appear in the file numbers. Such gaps should not be interpreted to indicate that documents exist in those file numbers.

Should you have further questions, please feel free to contact me by telephone at (602) 771 - 4763 or by email at NL2@azdeq.gov.

(520) 628-6733

Sincerely,

Nimeesha B. Lanson

Regulatory Compliance Administrator

Remedial Projects Unit, Waste Programs Division

cc by email: Scott R. Green, Arizona Department of Environmental Quality

- Manager, Remedial Projects Unit

Jeffrey D. Cantrell, Office of the Attorney General

- Assistant Attorney General