

# **Stage I Abatement Plan**

Albuquerque Products Terminal 6356 Desert Road Albuquerque, New Mexico

Phillips 66 Company



14998 West 6th Avenue Suite 800 Golden Colorado 80401 USA | 075015 | Report No 27| June 20 2019



## **Table of Contents**

1.	Introduction	1				
2.	Site Description	1				
3.	Site History 1					
4.	Site Investigations	4				
	4.1 Site Geology and Hydrogeology	4				
	4.2 Surface Water Hydrogeology	5				
5.	Monitoring Program	5				
6.	Quality Assurance Plan	6				
7.	Site Health and Safety Plan	6				
8.	Schedule	6				
9.	Conclusion and Planned Site Activities	6				
	9.1 Proposed Future Work	6				

## **Figure Index**

Figure 1	Site Vicinity Map
Figure 2	Site Plan
Figure 3	March 2019 Groundwater Potentiometric Surface Map
Figure 4	March 2019 Groundwater Concentration Map
Figure 5	Water Well Locations

## **Table Index**

Table 1	Historical Groundwater Elevation Data
Table 2	Historical Groundwater Analytical Data

# Appendix Index

Appendix A	Environmental Data Resources – GeoCheck Report
Appendix B	Quality Assurance Project Plan
Appendix C	Site Specific Health and Safety Plan



## 1. Introduction

This Stage I Abatement Plan presents the site investigations conducted by GHD Services, Inc. (GHD) at the Phillips 66 Company (Phillips 66) Albuquerque Products Terminal located at 6356 Desert Road in Albuquerque, New Mexico (Site). Site location is presented on Figure 1. General features of the Site are depicted on Figure 2. This report summarizes:

- Site Description
- Site History
- Site Investigations
- Monitoring Program
- Quality Assurance Plan
- Site Specific Health and Safety Plan
- Schedule
- Conclusion

## 2. Site Description

The Phillips 66 Albuquerque Products Terminal is an active bulk storage and distribution facility located in an industrial area approximately seven miles south of central Albuquerque in Bernalillo County. The Site encompasses approximately 16 acres and includes a tank farm, truck loading rack, and administrative building.

## 3. Site History

This Site has historically been impacted by various on-site sources.

On October 14, 1997, Phillips reported to The New Mexico Environment Department (NMED) Assessment and Abatement Section, a release of approximately 420 gallons of Transmix from a sump located in the truck loading rack. Approximately 168 gallons were recovered. Phillips collected soil samples within and beneath the impacted soils. On September 18, 1997, NMED approved the monitoring plan submitted on August 15, 1997. The monitoring plan specified sampling monitor wells MW-1 through MW-4 on a semi-annual bases for benzene, toluene, ethylbenzene, and xylene (BTEX) and ethylene dibromide (EDB).

On March 5, 2000, Phillips reported a release of approximately 546 gallons of Transmix from a sump located in the truck loading rack. Approximately 84 gallons were recovered. NMED approved the Corrective Action Report on November 22, 2000. Higgins and Associates installed a biovent well (BV-1) on January 23, 2001 in the vicinity of MW-5 to a total depth of 35 feet below ground surface (bgs). On March 6, 2001, monitoring point MP-1 was installed to a total depth of 35 feet bgs. The biovent well operated until October 2003.



ConocoPhillips received approval to modify the monitoring plan and abandon select monitor wells on October 30, 2003. On November 24 and 25, 2003, Maxim Technologies abandoned monitor wells MW-1, MW-2, MW-3 and MW-6.

NMED issued an administrative Compliance Order (CO) for the Site (GWQB 2004 03) on April 16, 2004. Three monitor wells (MW-7, MW-8, and MW-9) were installed in March 2007 for the purpose of above ground storage tank leak detection. These monitor wells, in addition to MW-4 and MW-5, were sampled annually since December 2009.

Releases were reported on December 17, 2009 in the Tank 102 and Tank 105 earthen containment areas. An estimated 138 barrels of aviation gasoline and water were released inside the berm of Tank 102 from a cracked coupling on a pipe located on the southwest side of Tank 102 on December 17, 2009. The second release was discovered by terminal operators on December 28, 2009, where an estimated 1,499 barrels of aviation gasoline and water were released into the earthen containment area of Tank 105 from the failed circulation line for Tank 102. Approximately 674 barrels of the released product and water were recovered using vacuum trucks the same day the release was discovered. Phillips 66 submitted a Corrective Action Plan (CAP) to the NMED on March 26, 2010 following initial release investigation efforts.

Soil vapor extraction (SVE) wells were installed at the Site along with monitor well MW-10 and air sparge well Al-01 in April 2010. Quarterly sampling of monitor wells MW-4 and MW-9 was initiated immediately following discovery of the Tank 102 releases. MW-10 was incorporated into the quarterly monitoring schedule after its installation.

Concurrent with the Tank 102 release investigation, delineation, and remediation system installation, a subsurface investigation of the loading rack area took place after vapor points in this area contained elevated detections of a tracer gas used in conjunction with a Tracer Tight® test. A direct push, truck mounted drill rig was used to delineate the area immediately surrounding the loading rack during November 2010. Subsequently, monitor well MW-11 was installed down gradient of the loading rack. MW-11 was added to the quarterly monitoring schedule immediately following installation.

A pilot test was conducted in January 2011, and the SVE system was started in June 2011.

Light non aqueous phase liquid (LNAPL) was discovered in monitor well MW-10 on September 22, 2011. In response to the LNAPL discovery, GHD placed a passive skimmer in MW-10 to recover LNAPL. The skimmer was checked, emptied, and reinstalled an average of three times per week from September 22 through November 1, 2011, and weekly thereafter until March 2012.

To further address LNAPL in MW-10, GHD installed monitor wells MW-12, MW-13, and MW-14 as potential LNAPL recovery and intermediate down gradient wells during November and December 2011. These wells were incorporated into the quarterly monitoring schedule immediately following installation.

Monitor well MW-10 was abandoned in March 2012. MW-12 was equipped with a recovery pump in June 2012, immediately after LNAPL was discovered in the well. Dual phase extraction events performed at MW-12 and MW-13 in the fall of 2012 recovered approximately 208 gallons of LNAPL. MW-12 was incorporated into the SVE system at the Site in July 2013.



In June of 2012, an effort to further develop monitor wells MW-12 and MW-13 took place in preparation for a dual phase extraction event. On June 18, 2012, both wells were surged repeatedly following the addition of Aquaclear® PFD. Both wells were bailed dry on the following day. On June 25, the wells were again surged following the addition of Aquaclear® AE. Both wells were then bailed dry repeatedly during the next four days. On June 27, 2012, 0.13 feet of product was discovered in MW-12. GHD installed a passive skimmer device in MW-12 immediately following discovery of LNAPL which was emptied weekly. An LNAPL recovery pump was installed at SVE-1D in May 2013. On July 13, LNAPL thickness in MW-12 had increased to 1.54 feet.

Beginning in March 2013, groundwater monitoring has been conducted on a semiannual basis.

The SVE system was shut down on August 9, 2013 because influent hydrocarbon concentrations were insufficient to maintain the system's operating temperature. The LNAPL recovery and SVE systems were restarted on September 4, 2013 with a modification allowing emissions to bypass the thermal oxidizer and vent to ambient air. Approximately 50 gallons of LNAPL were recovered by the system before it was shut off in January 2014.

The SVE system was operated intermittently during 2014. A declining mass removal rate, averaging 1.03 gallons per day during 201 days of operation in 2014, was the primary reason the SVE system was shut down after collection of the last air quality sample in September 2014. A 1.0 gallon per day mass removal rate had been established as a metric for consideration to cease operation of the SVE unit.

On September 30, 2015 GHD was on-site with the Albuquerque Environmental Health Department (AEHD) for a final inspection of the system to ensure all electrical components associated with the SVE unit have been disconnected. The AEHD issued a permit closure letter dated December 3, 2015. The SVE unit was dismantled and removed from the Site in May 2016.

Power supply issues and short life span of the delicate carbon vanes in the air compressor have resulted in only intermittent operation of the air sparging unit at the site.

On-site injection wells IW-1 and IW-2 and off site monitor well MW-15 were installed in August 2015.

GHD performed an in situ chemical oxidation (ISCO) pilot study in November 2015 to address 1, 2 Dichloroethane (EDC) impacts in the southern plume area of monitor wells MW-9 and MW-11. Approximately 1600 gallons of a sodium hydroxide catalyzed sodium persulfate solution was pumped into each of the two injection wells installed at the loading rack.

In December 2016, GHD conducted the second ISCO injection treatment. Twelve batches of 15% activated ISCO solution, totaling approximately 3,100 gallons, were injected into IW-1. Nine similar batches, totaling approximately 2,600 gallons, were injected into IW-2.

In December 2017, GHD conducted the third ISCO injection treatment. Twenty batches of 15% activated ISCO solution, totaling approximately 5,266 gallons, were injected into IW-1. Twenty similar batches, totaling approximately 5,266 gallons, were injected into IW-2.

In order to enhance the ISCO injections, GHD installed IW-4 on December 6, 2017, located approximately 15 feet up gradient of MW-9. GHD also cleared IW-3, located approximately 30 feet up gradient of MW-11, for utilities, but the well was not completed during this mobilization.



In April 2018, GHD received approval from NMED to complete the installation of IW-3. Injection well IW-3 and new monitor well MW-16 were installed between April 24 and 27, 2018.

## 4. Site Investigations

#### 4.1 Site Geology and Hydrogeology

Subsurface investigations including assessment and delineation have been occurring at the Site beginning in the late 1990s and continuing through April 2018. Based on boreholes and well logs, the site geology is predominately silty sand. The hydraulic conductivity of the Site is interpreted to be  $3.5 \times 10^{-6}$  feet/second based on the soil classification. No testing has been conducted to assess storativity, but in June of 1990, an eight inch water well was installed on site to 410 feet bgs and produced an estimated 400 gallons per minute. That well is used for firefighting activities and hydrostatic testing of the ASTs.

During the March 2019 sampling event, the groundwater elevations ranged from 4,903.66 feet above mean sea level (amsl) at MW-8 to 4,903.36 feet amsl at MW-15. Regional groundwater flows to the east/southeast with an approximate gradient of 0.0021 feet per foot, which is consistent with historical data. The Groundwater Potentiometric Surface Map is presented on Figure 3. Historical groundwater elevation data is presented in Table 1

Historical investigations near Tank 102 indicate that the vertical extent of the impacts extends to a depth of approximately 40 feet bgs. Investigations near Tank 105 found impacts extending to 20 feet bgs with one boring showing impacts to approximately 80 feet bgs. Investigations near the truck loading rack show elevated photoionization detector (PID) readings to a total depth of 35 feet bgs during the biovent well installation. Groundwater analytical data indicate impacts of EDC near the truck loading rack and EDB near Tanks 102 and 105. The March 2019 Groundwater Analytical Map is presented on Figure 4. Historical groundwater analytical data is presented in Table 2.

As part of the Stage 1 Abatement Plan, GHD requested a GeoCheck report from Environmental Data Resources (EDR) which identified all wells within a 1 mile radius of the Site. The following table includes water wells within a 1⁄4 mile radius of the Site. The remaining wells identified in the EDR report are outside of the 1⁄4 mile radius

Map ID	POD #	Location from Site	Depth (Screen Interval)	Designated Use	Potentiometric Location from Site
C14	RG 00541 X	0 – ¼ Mile East	186 (166 to 186)	Subdivision	Down gradient
D22	RG 00541 X2	⅓ to ¼ Mile SSW	160 (143 to 158)	Domestic and Sanitary	Lateral
D23	RG 40084 POD1	1∕₃ to 1⁄₄ Mile SSW	112 (107 to 112)	Sanitary	Lateral
E24	RG 56113 S2	¼ to ¼ Mile NE	Not Reported	Pollution Control	Lateral
E25	RG 56113	¼ to ¼ Mile NE	Not Reported	Pollution Control	Lateral

#### **Table 4.1 Water Well Search Results**



Map ID	POD #	Location from Site	Depth (Screen Interval)	Designated Use	Potentiometric Location from Site
E26	RG 56113 S	⅓ to ¼ Mile NE	Not Reported	Pollution Control	Lateral
F27	RG 00541 DS	⅓ to ¼ Mile SSE	128 (Unknown)	Industrial	Down gradient
F28	RG 00541 POD3	⅛ to ¼ Mile SSE	280 (206 – 276)	Industrial	Down gradient
D30	RG 96214 POD2	1∕8 to 1∕4 Mile SSW	Not Reported	Sanitary	Lateral

**Table 4.1 Water Well Search Results** 

During the data review, GHD did not identify any drinking water wells within a one mile radius that are at risk from the groundwater impacts at the Site. The EDR GeoCheck map, presenting all existing wells within the subject area is presented on Figure 5. The full EDR report with well details is presented as Appendix A.

#### 4.2 Surface Water Hydrogeology

According to the Environmental Protection Agency's website "How's My Waterway," an unnamed tributary to the Rio Grande is located approximately 0.7 miles south of the Site. Surface water runoff would leave the site to the south and flow via ditch to the west. Water would eventually enter the Rio Grande approximately 4.5 miles south and west of the Site. Based on the location of surface waters in relation to the site, GHD does not believe that further surface water assessment activities are warranted.

## 5. Monitoring Program

Semiannual groundwater monitoring and reporting will continue at the Site, utilizing low flow sampling techniques. Each groundwater monitoring event will include both gauging the depth to groundwater and collection of groundwater samples. The depth to groundwater will be measured using an oil-water interface probe graduated in increments of 0.01 feet. The total depth of the well will also gauged. The depth measurements will be made relative to a previously surveyed reference mark on the top of the PVC riser.

At each monitoring well, a bladder pump with a dedicated polyethylene bladder and dedicated polyethylene-lined tubing will be slowly submerged until the pump intake depth was set at approximately the center of the saturated screen or at the targeted pump intake depth based on prior groundwater sampling results. The water discharge line will be connected to a water quality meter and the airline will be attached to an MP-50 air compressor and control box. The pump will be activated, the purge rate will be set; and initial groundwater field parameters will be measured and recorded.

During the purge, the parameters will be measured and recorded at intervals of approximately five minutes. Parameters measured and recorded during the purge period will be pH, dissolved oxygen (DO), oxidation-reduction potential, temperature, turbidity, and specific conductance. Once these parameters stabilized to within criteria specified by the NMED, the water line will be disconnected from the water quality meter and the sample will be transferred from the water line directly into



laboratory-prepared sampling jars. Please note GHD is an NMED-certified laboratory (certification no. 12033) for the following analyze-immediately parameters: pH, specific conductance, DO, and turbidity.

The samples will be labeled and placed in a cooler containing ice pending shipment to Pace Analytical under chain of custody documentation. All samples will be analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX) and EDC by Environmental Protection Agency (EPA) Method 8260, naphthalene by EPA Method 8270, and EDB by EPA Method 8011. These parameters are the contaminants of concern (COC) in groundwater at the Site.

## 6. Quality Assurance Plan

GHD has prepared a quality assurance plan which is presented as Appendix B

## 7. Site Health and Safety Plan

GHD has prepared a site specific health and safety plan which is presented as Appendix C

## 8. Schedule

Based on the data previously collected at the Site, GHD contends that this Stage 1 Abatement Plan can suffice for the Final Site Investigation Report.

## 9. Conclusion and Planned Site Activities

Site investigations have been occurring at the Site since the late 1990's and have continued through 2018. No further subsurface investigations will take place at this time, as the two contaminant plumes have been fully delineated and concentrations are stable or declining. Groundwater samples collected in March 2019 from monitor wells MW-9, MW-11, MW-12, MW-13, MW-14 and MW-16 contained contaminants of concern at concentrations above NMWQCC standards Semiannual groundwater monitoring and reporting will continue for the Site, as directed by the NMED.

#### 9.1 **Proposed Future Work**

GHD is planning to complete the Stage 2 Abatement plan when directed by the NMED. Following the approval of the Stage 2 Abatement Plan and the underground injection permit, GHD will continue ISCO injections to remediate the EDC impacts near the truck loading rack.



Based on the recent groundwater chemical concentrations and their relation to the property boundary, the EDB plume in the tank farm area appears to be stable and/or declining. GHD and P66 will focus on the EDC remediation while continuing to monitor the EDB plume.

All of Which is Respectfully Submitted,

GHD

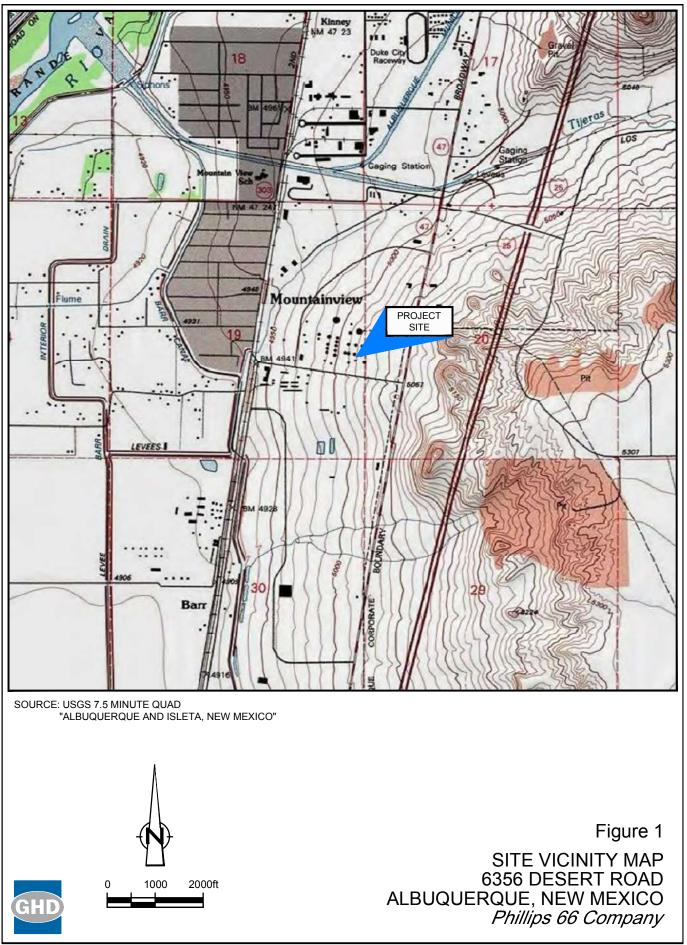
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David Bonga Project Manager

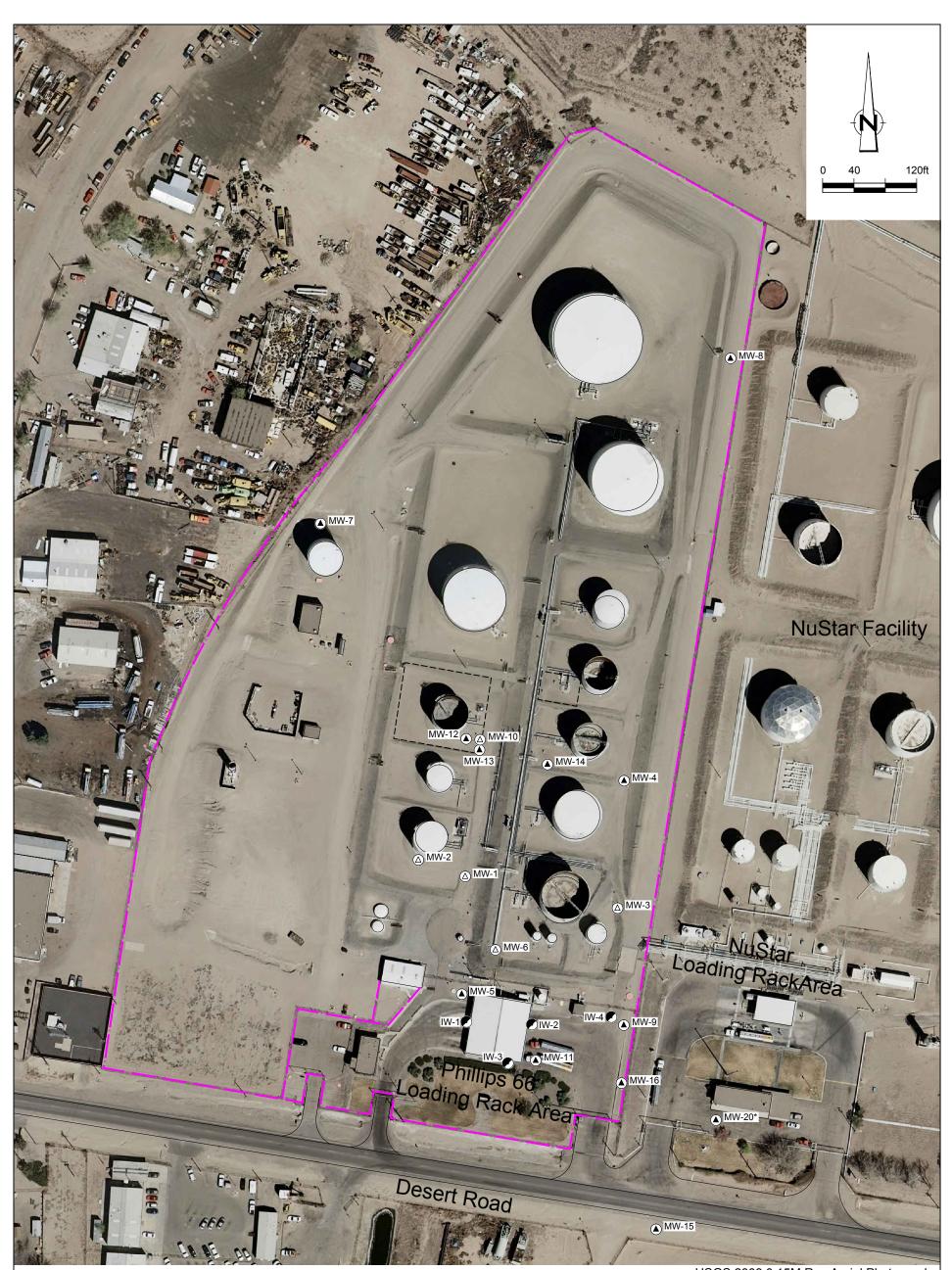
Christina Ruby Portfolio Manager

# Figures

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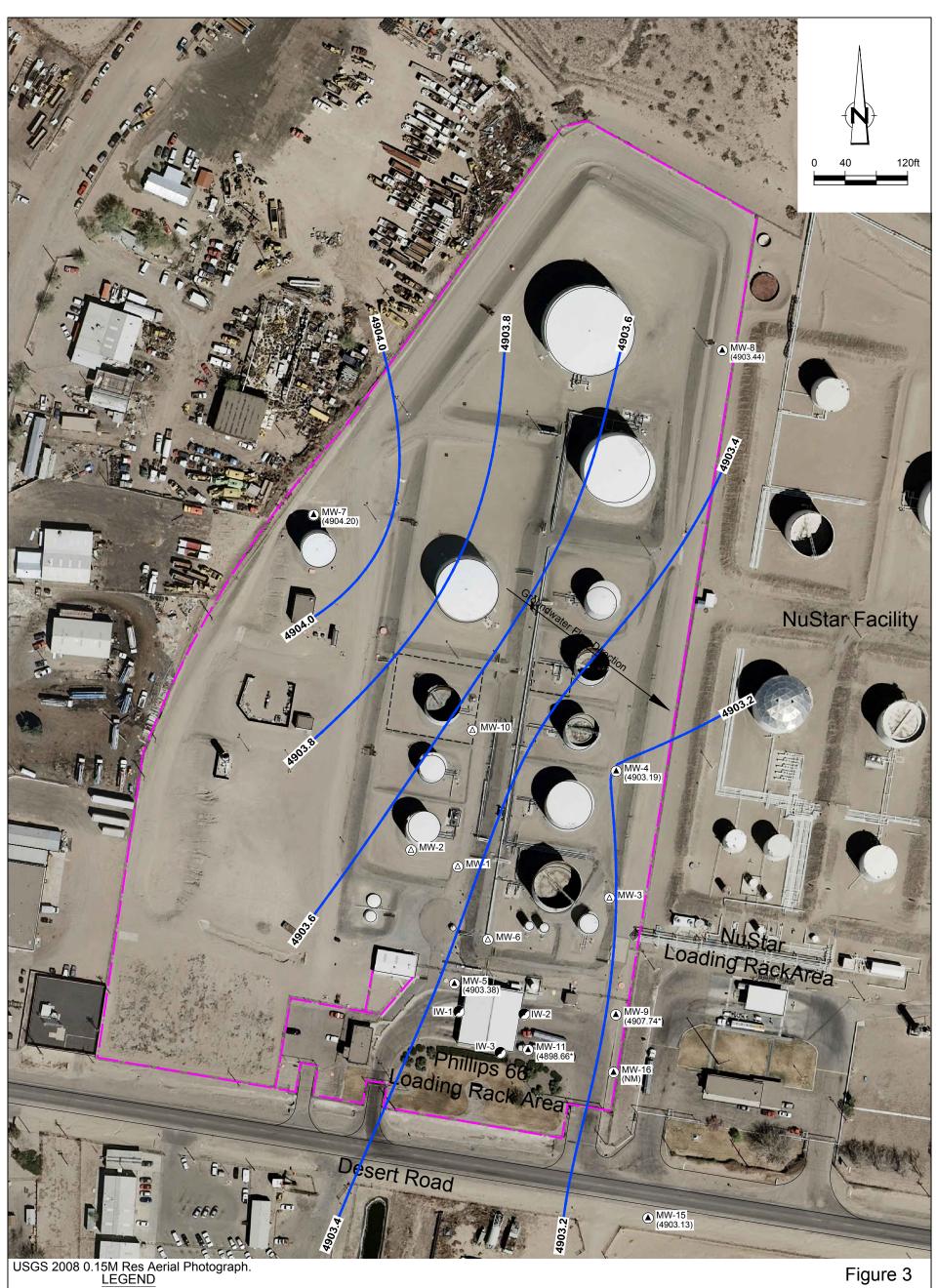
075015-95(025)GN-DL001\_SITE VICINITY MAP JUN 7, 2019



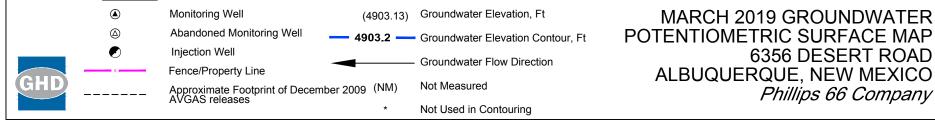
# LEGEND USGS 2008 0.15M Res Aerial Photograph. Image: Monitoring Well Figure 2 Image: Abandoned Monitoring Well SITE PLAN Image: Injection Well SITE PLAN

075015-95(025)GN-DL002\_SITE PLAN JUN 7, 2019

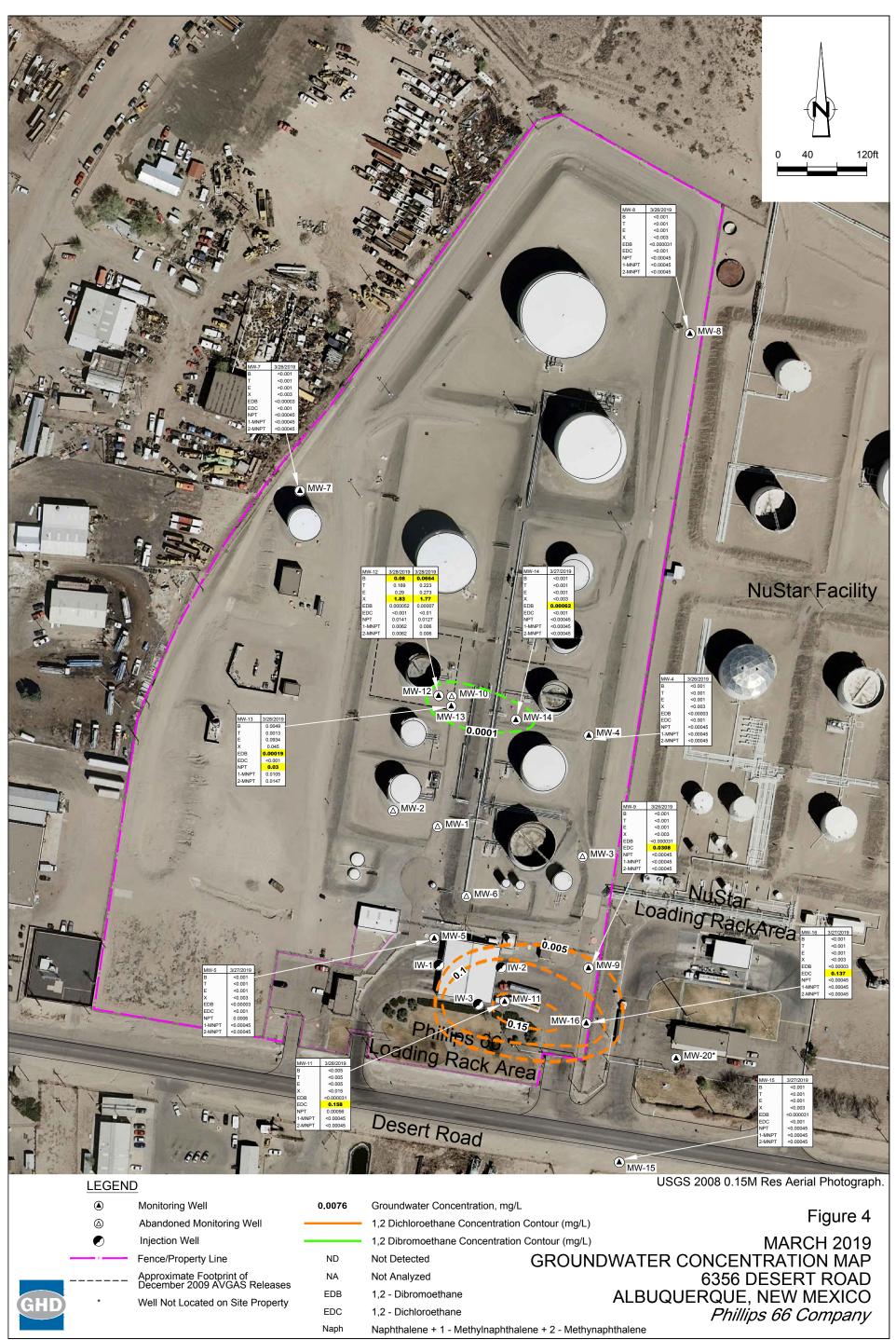
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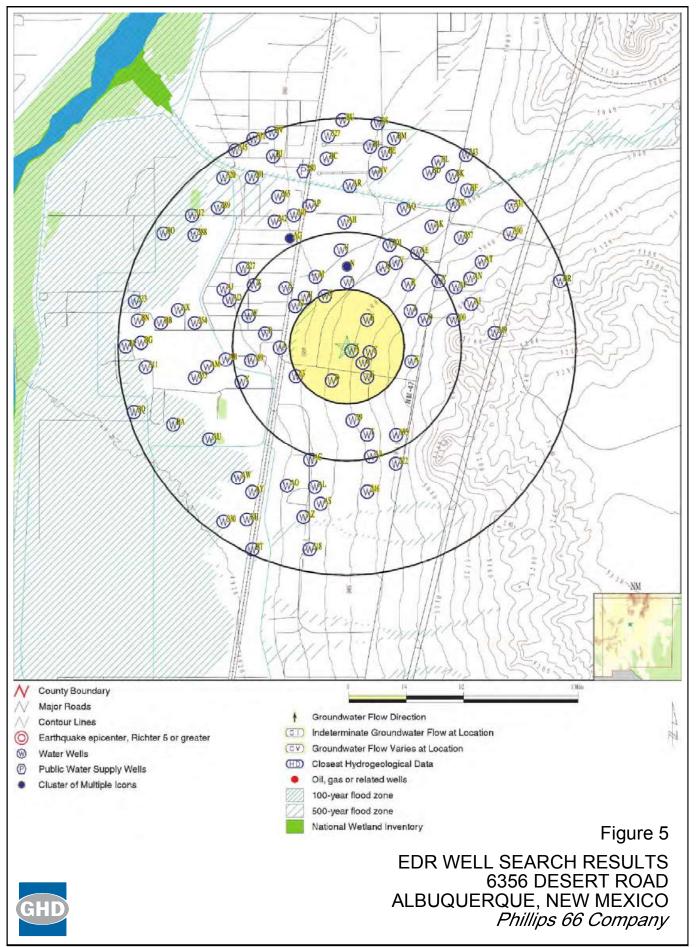
## Figure 3



075015-95(025)GN-DL003\_GW POTENTIOMETRIC SURFACE MAP JUN 7, 2019



075015-95(025)GN-DL004\_GW CONCENTRATION MAP JUN 7, 2019



075015-95(025)GN-DL005 JUN 7, 2019

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Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-4	8/18/1994	4996.96		NM		NM
MW-4	11/8/1995	4996.96		NM		NM
MW-4	2/6/1995	4996.96		NM		NM
MW-4	5/4/1995	4996.96		NM		NM
MW-4	8/22/1995	4996.96		NM		NM
MW-4	11/8/1995	4996.96		NM		NM
MW-4	2/27/1996	4996.96		NM		NM
MW-4	5/8/1997	4996.96		92.80		4904.16
MW-4	10/10/1997	4996.96		92.02		4904.94
MW-4	4/22/1998	4996.96		92.80		4904.16
MW-4	11/2/1998	4996.96		92.06		4904.90
MW-4	4/29/1999	4996.96		92.84		4904.12
MW-4	10/15/1999	4996.96		92.11		4904.85
MW-4	4/19/2000	4996.96		93.08		4903.88
MW-4	10/24/2000	4996.96		92.09		4904.87
MW-4	4/19/2001	4996.96		93.04		4903.92
MW-4	10/25/2001	4996.96		92.56		4904.40
MW-4	4/24/2002	4996.96		93.25		4903.71
MW-4	10/31/2002	4996.96		92.85		4904.11
MW-4	4/22/2003	4996.96		93.29		4903.67
MW-4	10/31/2003	4996.96		93.05		4903.91
MW-4	5/10/2004	4996.96		93.66		4903.30
MW-4	11/24/2004	4996.96		93.33		4903.63
MW-4	9/28/2005	4996.96		93.53		4903.43
MW-4	11/3/2006	4996.96		93.37		4903.59
MW-4	4/5/2007	4996.96		94.43		4902.53
MW-4	10/24/2007	4996.96		93.72		4903.24
MW-4	10/29/2008	4996.96		93.83		4903.13
MW-4	10/29/2009	4996.96		93.71		4903.25
MW-4	12/31/2009	4996.96		94.03		4902.93
MW-4	3/10/2010	4996.96		94.44		4902.52
MW-4	9/8/2010	4996.96		94.09		4902.87
MW-4	12/29/2010	4996.96		94.13		4902.83
MW-4	3/31/2011	4996.96		94.63		4902.33
MW-4	5/4/2011	4996.96		94.31		4902.65
MW-4	6/30/2011	4996.96		94.20		4902.76
MW-4	9/23/2011	4996.96		94.06		4902.90
MW-4	12/22/2011	4996.96		94.19		4902.77
MW-4	4/4/2012	4996.96		94.68		4902.28
MW-4	6/28/2012	4996.96		94.40		4902.56
MW-4	9/27/2012	4996.96		94.15		4902.81
MW-4	12/4/2012	4996.96		94.26		4902.70
MW-4	3/27/2013	4996.96		94.67		4902.29

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-4	9/24/2013	4996.96		94.02		4902.94
MW-4	3/11/2014	4996.96		94.32		4902.64
MW-4	9/11/2014	4996.96		93.84		4903.12
MW-4	3/10/2015	4996.96		94.32		4902.64
MW-4	9/16/2015	4996.96		93.54		4903.42
MW-4	3/17/2016	4996.96		93.93		4903.03
MW-4	9/20/2016	4996.96		93.93		4903.03
MW-4	4/5/2017	4996.96		93.62		4903.34
MW-4	10/20/2017	4996.96		93.32		4903.64
MW-4	3/28/2018	4996.96		93.65		4903.31
MW-4	9/17/2018	4996.96		93.54		4903.42
MW-4	9/26/2019	4996.96		93.77		4903.19
MW-5	4/22/1998	4991.4		87.24		4904.16
MW-5	11/2/1998	4991.4		86.51		4904.10 4904.89
						4904.89 4904.15
MW-5	4/29/1999	4991.4		87.25		
MW-5	10/15/1999	4991.4		86.48		4904.92
MW-5	4/19/2000	4991.4		87.03		4904.37
MW-5	10/24/2000	4991.4		86.48		4904.92
MW-5	4/19/2001	4991.4		88.47		4902.93
MW-5	10/25/2001	4991.4		86.91		4904.49
MW-5	4/24/2002	4991.4		87.64		4903.76
MW-5	10/31/2002	4991.4		87.20		4904.20
MW-5	4/22/2003	4991.4		87.59		4903.81
MW-5	10/31/2003	4991.4		87.28		4904.12
MW-5	5/10/2004	4991.4		87.99		4903.41
MW-5	11/24/2004	4991.4		87.61		4903.79
MW-5	9/28/2005	4991.4		87.83		4903.57
MW-5	11/3/2006	4991.4		87.64		4903.76
MW-5	4/5/2007	4991.4		88.75		4902.65
MW-5	10/25/2007	4991.4		88.03		4903.37
MW-5	10/29/2008	4991.4		88.07		4903.33
MW-5	10/30/2009	4991.4		88.01		4903.39
MW-5	12/31/2009	4991.4		88.29		4903.11
MW-5	3/10/2010	4991.4		88.74		4902.66
MW-5	9/9/2010	4991.4		88.37		4903.03
MW-5	12/29/2010	4991.4		88.35		4903.05
MW-5	3/31/2011	4991.4		88.86		4902.54
MW-5	5/4/2011	4991.4		88.65		4902.75
MW-5	6/30/2011	4991.4		88.43		4902.97
MW-5	9/23/2011	4991.4		88.31		4903.09
MW-5	12/22/2011	4991.4		NM		NM
MW-5	4/4/2012	4991.4		88.93		4902.47

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-5	6/28/2012	4991.4		88.64		4902.76
MW-5	9/27/2012	4991.4		88.45		4902.95
MW-5	3/10/2015	4991.4		88.45		4902.95
MW-5	3/28/2013	4991.4		88.95		4902.45
MW-5	9/24/2013	4991.4		88.26		4903.14
MW-5	3/11/2014	4991.4		88.58		4902.82
MW-5	9/11/2014	4991.4		88.03		4903.37
MW-5	3/10/2015	4991.4		88.61		4902.79
MW-5	9/15/2015	4991.4		87.89		4903.51
MW-5	3/17/2016	4991.4		88.22		4903.18
MW-5	9/20/2016	4991.4		87.60		4903.80
MW-5	4/5/2017	4991.4		87.89		4903.51
MW-5	10/17/2017	4991.4		87.53		4903.87
MW-5	3/27/2018	4991.4		87.96		4903.44
MW-5	9/17/2018	4991.4		87.75		4903.65
MW-5	9/26/2019	4991.4		88.02		4903.38
MW-7	4/5/2007	4982.36		78.94		4903.42
MW-7	10/24/2007	4982.36		78.17		4904.19
MW-7	10/28/2008	4982.36		78.16		4904.20
MW-7	10/29/2009	4982.36		78.10		4904.26
MW-7	12/31/2009	4982.36		78.42		4903.94
MW-7	3/10/2010	4982.36		78.87		4903.49
MW-7	9/8/2010	4982.36		78.51		4903.85
MW-7	12/29/2010	4982.36		78.54		4903.82
MW-7	3/31/2011	4982.36		78.98		4903.38
MW-7	5/4/2011	4982.36		78.72		4903.64
MW-7	6/30/2011	4982.36		78.50		4903.86
MW-7	9/22/2011	4982.36		78.43		4903.93
MW-7	12/22/2011	4982.36		78.56		4903.80
MW-7	4/4/2012	4982.36		79.04		4903.32
MW-7	6/28/2012	4982.36		78.70		4903.66
MW-7	9/27/2012	4982.36		78.52		4903.84
MW-7	12/4/2012	4982.36		78.61		4903.75
MW-7	3/28/2013	4982.36		79.04		4903.32
MW-7	9/23/2013	4982.36		78.46		4903.90
MW-7	3/11/2014	4982.36		78.83		4903.53
MW-7	9/10/2014	4982.36		78.31		4904.05
MW-7	3/9/2015	4982.36		78.80		4903.56
MW-7	9/15/2015	4982.36		78.01		4904.35
MW-7	3/17/2016	4982.36		78.43		4903.93
MW-7	9/20/2016	4982.36		77.71		4904.65
MW-7	4/5/2017	4982.36		77.96		4904.40

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-7	10/17/2017	4982.36		76.95		4905.41
MW-7	3/27/2018	4982.36		78.08		4904.28
MW-7	9/17/2018	4982.36		77.85		4904.51
MW-7	3/26/2019	4982.36		78.16		4904.20
MW-8	4/5/2007	4997.28		94.52		4902.76
MW-8	10/24/2007	4997.28		93.91		4903.37
MW-8	10/28/2008	4997.28		93.94		4903.34
MW-8	10/29/2009	4997.28		93.89		4903.39
MW-8	12/31/2009	4997.28		94.11		4903.17
MW-8	3/10/2010	4997.28		94.57		4902.71
MW-8	9/8/2010	4997.28		94.27		4903.01
MW-8	12/29/2010	4997.28		94.26		4903.02
MW-8	3/31/2011	4997.28		94.72		4902.56
MW-8	5/4/2011	4997.28		94.51		4902.77
MW-8	6/30/2011	4997.28		94.36		4902.92
MW-8	9/22/2011	4997.28		94.19		4903.09
MW-8	12/22/2011	4997.28		94.30		4902.98
MW-8	4/4/2012	4997.28		94.72		4902.56
MW-8	6/28/2012	4997.28		94.49		4902.79
MW-8	9/27/2012	4997.28		94.26		4903.02
MW-8	12/4/2012	4997.28		94.33		4902.95
MW-8	3/28/2013	4997.28		94.70		4902.58
MW-8	9/23/2013	4997.28		94.22		4903.06
MW-8	3/11/2014	4997.28		94.48		4902.80
MW-8	9/10/2014	4997.28		94.05		4903.23
MW-8	3/9/2015	4997.28		94.42		4902.86
MW-8	9/15/2015	4997.28		93.77		4903.51
MW-8	3/17/2016	4997.28		94.04		4903.24
MW-8	9/20/2016	4997.28		93.51		4903.77
MW-8	4/5/2017	4997.28		93.71		4903.57
MW-8	10/20/2017	4997.28		93.43		4903.85
MW-8	3/27/2018	4997.28		93.72		4903.56
MW-8	9/17/2018	4997.28		93.62		4903.66
MW-8	3/26/2019	4997.28		93.84		4903.44

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
	4/5/0007	1000 74		00.05		1000.10
MW-9	4/5/2007	4998.74		96.25		4902.49
MW-9 MW-9	10/25/2007	4998.74		95.51		4903.23
MW-9	10/29/2008 10/29/2009	4998.74 4998.74		95.55 95.50		4903.19 4903.24
MW-9	12/31/2009	4998.74		95.82		4903.24 4902.92
MW-9	3/10/2010	4998.74		96.17		4902.92
MW-9	9/9/2010	4998.74		95.89		4902.87
MW-9	12/29/2010	4998.74		95.92		4902.83
MW-9	3/31/2011	4998.74		96.32		4902.42
MW-9	5/4/2011	4998.74		96.12		4902.62
MW-9	6/30/2011	4998.74		95.92		4902.82
MW-9	9/23/2011	4998.74		95.79		4902.95
MW-9	12/22/2011	4998.74		95.88		4902.86
MW-9	4/4/2012	4998.74		96.38		4902.36
MW-9	6/28/2012	4998.74		96.12		4902.62
MW-9	9/27/2012	4998.74		95.92		4902.82
MW-9	12/4/2012	4998.74		95.93		4902.81
MW-9	3/28/2013	4998.74		96.40		4902.34
MW-9	9/23/2013	4998.74		95.73		4903.01
MW-9	3/11/2014	4998.74		96.01		4902.73
MW-9	9/10/2014	4998.74		95.52		4903.22
MW-9	3/9/2015	4998.74		96.03		4902.71
MW-9	9/16/2015	4998.74		95.37		4903.37
MW-9	1/11/2016	4998.74		95.31		4903.43
MW-9	3/18/2016	4998.74		95.70		4903.04
MW-9	9/20/2016	4998.74		95.12		4903.62
MW-9	4/6/2017	4998.74		95.37		4903.37
MW-9	10/20/2017	4998.74		NM		
MW-9	3/28/2018	4998.74		95.55		4903.19
MW-9	9/17/2018	4998.74		95.19		4903.55
MW-9	3/26/2019	4998.74		91.00		4907.74
MW-10	4/22/2010	NM		NM		NM
MW-10	6/30/2010	NM		84.05		NM
MW-10	9/9/2010	NM		83.97		NM
MW-10	12/29/2010	NM		83.98		NM
MW-10	3/31/2011	NM		84.46		NM
MW-10	6/30/2011	NM		83.91		NM
MW-10	9/23/2011	NM		NM		NM
MW-10	12/22/2011	NM		84.38		NM
MW-10	3/13/2018	Destroyed				

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-11	4/1/2011	4994.19		91.81		4902.38
MW-11	6/30/2011	4994.19		91.39		4902.8
MW-11	9/23/2011	4994.19		91.21		4902.98
MW-11	12/22/2011	4994.19		91.34		4902.85
MW-11	4/4/2012	4994.19		91.83		4902.36
MW-11	6/28/2012	4994.19		91.55		4902.64
MW-11	9/27/2012	4994.19		91.36		4902.83
MW-11	12/4/2012	4994.19		91.38		4902.81
MW-11	3/28/2013	4994.19		91.86		4902.33
MW-11	9/24/2013	4994.19		91.16		4903.03
MW-11	3/11/2014	4994.19		91.48		4902.71
MW-11	9/10/2014	4994.19		90.95		4903.24
MW-11	3/9/2015	4994.19		91.49		4902.7
MW-11	9/16/2015	4994.19		90.78		4903.41
MW-11	1/11/2016	4994.19		90.79		4903.4
MW-11	3/18/2016	4994.19		91.11		4903.08
MW-11	9/20/2016	4994.19		90.49		4903.7
MW-11	4/6/2017	4994.19		90.79		4903.4
MW-11	10/20/2017	4994.19		90.58		4903.61
MW-11	3/28/2018	4994.19		90.98		4903.21
MW-11	9/17/2018	4994.19		90.68		4903.51
MW-11	3/26/2019	4994.19		95.53		4898.66
MW-12	12/20/2011	NM		86.2		NM
MW-12	4/4/2012	NM		86.67		NM
MW-12	6/28/2012	NM	85.54	86.53	0.99	NM
MW-12	9/28/2012	NM	85.85	87.20	1.35	NM
MW-12	12/4/2012	NM	85.46	85.57	0.11	NM
MW-12	3/28/2013	NM	85.78	86.24	0.46	NM
MW-12	9/23/2013	NM		86.66		NM
MW-12	3/11/2014	NM		85.28		NM
MW-12	9/11/2014	NM	87.01	87.02	0.01	NM
MW-12	3/10/2015	NM		87.25		NM
MW-12	9/15/2015	NM	87.07	87.13	0.06	NM
MW-12	3/17/2016	NM		87.36		NM
MW-12	9/20/2016	NM		86.64		NM
MW-12	4/6/2017	NM		87.00		NM
MW-12	10/23/2017	NM		85.38		NM
MW-12 MW-12	3/29/2018 9/17/2018	NM NM		85.70 85.53		NM
MW-12	3/26/2019	NM		85.79		NM NM
10100-12	512012018	I NIVI		00.19		INIVI

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-13	12/28/2011	NM				NM
MW-13	4/4/2012	NM		87.57		NM
MW-13	6/29/2012	NM		87.18		NM
MW-13	9/28/2012	NM	86.80	88.13	1.33	NM
MW-13	12/4/2012	NM	86.94	87.27	0.33	NM
MW-13	3/28/2013	NM	87.37	88.10	0.73	NM
MW-13	9/24/2013	NM		86.69		NM
MW-13	3/11/2014	NM		87.22		NM
MW-13	9/11/2014	NM		86.60		NM
MW-13	3/10/2015	NM		87.68		NM
MW-13	9/16/2015	NM		86.55		NM
MW-13	3/18/2016	NM		86.91		NM
MW-13	9/20/2016	NM		85.85		NM
MW-13	4/6/2017	NM		86.52		NM
MW-13	10/23/2017	NM		86.27		NM
MW-13	3/28/2018	NM		86.62		NM
MW-13	9/17/2018	NM		86.46		NM
MW-13	3/26/2019	NM		86.71		NM
MW-14	12/28/2011	NM				NM
MW-14	4/4/2012	NM		92.33		NM
MW-14	6/28/2012	NM		92.07		NM
MW-14	9/27/2012	NM		91.91		NM
MW-14	12/4/2012	NM		91.91		NM
MW-14	3/27/2013	NM		92.37		NM
MW-14	9/24/2013	NM		91.67		NM
MW-14	3/11/2014	NM	92.05	92.06	0.01	NM
MW-14	9/11/2014	NM		91.49		NM
MW-14	3/10/2015	NM		92.04		NM
MW-14	9/16/2015	NM		91.37		NM
MW-14	3/17/2016	NM		91.67		NM
MW-14	9/20/2016	NM		91.10		NM
MW-14	4/6/2017	NM		91.35		NM
MW-14	10/20/2017	NM		91.06		NM
MW-14	3/28/2018	NM		91.40		NM
MW-14	9/17/2018	NM		91.23		NM
MW-14	3/26/2019	NM		91.51		NM

#### Historical Groundwater Elevation Data Albuquerque Products Terminal 6356 Desert Road Albuquerque, New Mexico

Well ID	Sample Date	Casing Elevation (ft-amsl)	Depth to LNAPL (ft-btoc)	Depth to Water (ft-btoc)	LNAPL Thickness (ft)	Corrected Groundwater Elevation (ft-amsl)
MW-15	9/16/2015	5003.86		100.70		4903.16
MW-15	3/17/2016	5003.86		100.96		4902.9
MW-15	9/20/2016	5003.86		100.33		4903.53
MW-15	4/5/2017	5003.86		100.61		4903.25
MW-15	10/18/2017	5003.86		100.28		4903.58
MW-15	3/27/2018	5003.86		100.63		4903.23
MW-15	9/17/2018	5003.86		100.50		4903.36
MW-15	3/26/2019	5003.86		100.73		4903.13
	0/47/0040	N 18 4		07.00		N 1N 4
MW-16	9/17/2018	NM		97.36		NM
MW-16	3/26/2019	NM		85.65		NM

Notes:

ft = feet

amsl = above mean sea level

LNAPL = light non-aqueous phase liquid

btoc = below top of casing

-- = not detected

DRY = well dry upon gauging

Corrected Groundwater Elevation = Top of Casing - (Depth To Water - (0.78 x LNAPL Thickness))

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	1,2-EDB (mg/L)	1,2-EDC (mg/L)	Naphthalene (mg/L)	1- Methylnaphthalene (mg/L)	2- Methylnaphthalen (mg/L)
	W Standards	0.01	0.75	0.75	0.75	0.0001	0.01	0.03	0.03	0.03
		0.01	0.10	0.10	0.10	0.0001	0.01	0.00	0.00	0.00
MW-4	08/18/94	0.0052	ND	0.0015	0.024					
MW-4	11/10/94	0.0058	ND	ND	0.017					
MW-4	02/06/95	0.0033	ND	ND	0.0094					
MW-4	05/04/95	0.0059	ND	ND	0.016					
MW-4	08/22/95	0.0037	ND	ND	0.01					
MW-4	11/08/95	0.0023	ND	ND	0.0096					
MW-4	02/27/96	0.0022	ND	0.00096	0.000					
MW-4	05/08/97	0.007	ND	0.0023	0.022		0.002			
MW-4	10/10/97	0.0046	ND	ND	0.0032	0.004				
MW-4	04/22/98	0.004	ND	ND	0.0049	0.0051				
MW-4	11/02/98	0.0004	0.0004	0.006	0.0135	0.0022				
MW-4	04/29/99	0.0005				0.00845				
MW-4	10/15/99	0.0045	ND	ND	ND	0.0056				
MW-4	04/19/00	0.0045			ND 	0.0038				
MW-4	10/24/00	0.0019	ND	ND	ND	0.0033				
MW-4		0.0019		ND	ND 					
	04/19/01					0.00054				
MW-4	10/25/01	ND	ND	ND	ND					
MW-4	04/24/02					0.00008				
MW-4	10/31/02	< 0.002	< 0.002	< 0.002	< 0.005	0.000037	< 0.000029			
MW-4	04/22/03					0.000044				
MW-4	10/31/03					0.000032				
MW-4	05/10/04					0.000016				
MW-4	11/24/04									
MW-4	09/28/05	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-4	11/03/06	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-4	10/24/07	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		< 0.001
MW-4	10/29/08	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005
MW-4	10/29/09	< 0.001	< 0.001	0.0011	< 0.003			< 0.01		< 0.01
MW-4	12/31/09	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001			
MW-4	03/10/10	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001			
MW-4	06/30/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
MW-4	09/08/10	< 0.001	< 0.001	0.0018	< 0.001	< 0.001	< 0.001	< 0.0052	< 0.0052	< 0.0052
MW-4	12/29/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
MW-4	03/31/11	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		
MW-4	06/30/11	< 0.0010	< 0.0010	< 0.0010	< 0.0030	< 0.0010	< 0.0010	< 0.0053	< 0.0053	< 0.0053
MW-4	09/23/11	< 0.001	< 0.001	0.0019	< 0.003	< 0.0005	< 0.0005	< 0.01		
MW-4	12/22/11	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.01		
MW-4	04/04/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.0005	< 0.00053		
MW-4	06/28/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.0005		
MW-4	09/27/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.0005		
MW-4	12/04/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.0005	< 0.0005	< 0.0005
MW-4	03/27/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
MW-4	09/24/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-4	03/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-4	09/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-4	03/10/15	< 0.001	0.0051	0.265	0.0608	< 0.001	< 0.001	0.0018		
MW-4	09/15/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000031	< 0.001	< 0.00045		
MW-4	03/17/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.0045	< 0.0045
MW-4	09/20/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00045	< 0.0045	< 0.0045
MW-4	04/05/17	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000029		< 0.0005		
MW-4	10/20/17	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000023	< 0.001	0.00056	< 0.0005	< 0.0005
MW-4	03/28/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000029	< 0.0005	< 0.00051	< 0.00051	< 0.00051
MW-4	09/18/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000029	< 0.0003	< 0.00045	< 0.00045	< 0.00045
MW-4	03/26/19	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
· · · · · · · · · · · · · · · · · · ·	00,20,10	0.001					0.001			

Well ID	Sample Date	Benzene	Toluene		Total Xylenes	1,2-EDB	1,2-EDC		1- Methylnaphthalene	
NMWQCC G		(mg/L) 0.01	(mg/L) 0.75	(mg/L) 0.75	(mg/L) 0.75	(mg/L) 0.0001	(mg/L) 0.01	(mg/L) 0.03	(mg/L) 0.03	(mg/L) 0.03
NINIVIQUU	W Standarus	0.01	0.75	0.75	0.75	0.0001	0.01	0.03	0.03	0.03
MW-5	04/22/98	0.0082	0.12	0.0054	0.65					
MW-5	11/02/98	0.07	0.556	0.098	1.08		0.0097			
MW-5	04/29/99	0.1	0.74	0.13	0.724		<			
MW-5	10/15/99	0.075	0.42	0.14	0.41		0.02			
MW-5	04/19/00	0.029	0.13	0.014	0.044		0.0029			
MW-5	10/24/00	0.066	0.2	ND	0.019		0.023			
MW-5	04/19/01	0.021	0.16	0.0042	0.093	< 0.0002	0.016	0.012	0.0021	0.0057
MW-5	10/25/01	0.01	0.02	< 0.0005	0.0027	< 0.0002	0.012	0.018	0.017	0.027
MW-5	04/24/02	0.0065	0.001	< 0.0005	< 0.001	< 0.0002	< 0.0005	0.0031	0.0039	0.0094
MW-5	10/31/02	0.017	< 0.002	< 0.002	< 0.007	< 0.01	0.0052	< 0.01		
MW-5	04/22/03	< 0.005	< 0.005	< 0.005	< 0.005	< 0.000029	< 0.005			
MW-5	10/31/03	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-5	05/10/04	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-5	11/24/04	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-5	09/28/05	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-5	11/03/06	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		
MW-5	10/25/07	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		< 0.001
MW-5	10/29/08	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005
MW-5	10/30/09	< 0.001	< 0.001	< 0.001	< 0.003			< 0.01		< 0.01
MW-5	12/31/09	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001			
MW-5	09/09/10	< 0.001	< 0.001	0.0016	< 0.001	< 0.001	< 0.001	< 0.0053	< 0.0053	< 0.0053
MW-5	09/23/11	< 0.001	< 0.001	0.0016	< 0.003	< 0.0005	< 0.0005	< 0.01		
MW-5	09/28/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.0059	< 0.0005		
MW-5	03/28/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
MW-5	09/24/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-5	03/13/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-5	09/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-5	03/10/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-5	09/15/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00045		
MW-5	03/17/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-5	09/20/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00053	< 0.00053	< 0.00053
MW-5	04/05/17	< 0.001	< 0.001	< 0.001	< 0.003			< 0.0005		
MW-5	10/17/17	< 0.001	< 0.001	< 0.001	< 0.003	<0.00003	< 0.001	<0.00091		
MW-5	03/27/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000029	< 0.0005	< 0.0005	< 0.0005	< 0.0005
MW-5	09/17/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-5	03/27/19	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	0.00060	< 0.00045	< 0.00045
MW-7	10/24/07	< 0.0005	< 0.0008	< 0.0007	< 0.0008			< 0.001		< 0.001
MW-7	10/28/08	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005
MW-7	10/29/09	< 0.001	< 0.001	< 0.001	< 0.003			< 0.01		< 0.01
MW-7	12/31/09	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001			
MW-7	09/08/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.0053	< 0.0053	< 0.0053	< 0.0053	< 0.0053
MW-7	09/22/11	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.01		
MW-7	09/27/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.0005		
MW-7	03/28/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
MW-7	09/23/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-7	03/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-7	09/10/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-7	03/09/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-7	09/15/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00045		
MW-7	03/17/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000031	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-7	09/20/16	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.000050	< 0.000050	< 0.000050
MW-7	04/05/17	< 0.001	< 0.001	< 0.001	< 0.003		< 0.001	< 0.0005		
MW-7	10/17/17	< 0.001	< 0.001	< 0.001	< 0.003	<0.00003	< 0.001	<0.00097		
MW-7	03/27/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.0005	< 0.00045	< 0.00045	< 0.00045
MW-7	09/17/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-7	03/26/19	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045

NMWQCC GW Sr           MW-8	ample Date tandards 10/24/07 10/28/08 10/29/09 12/31/09 09/08/10 09/22/11 09/27/12 03/28/13	Benzene (mg/L) 0.01 < 0.0005 < 0.005 < 0.001 < 0.001 < 0.001	Toluene (mg/L) 0.75 < 0.0008 < 0.005 < 0.001	(mg/L) 0.75 < 0.0007	Total Xylenes (mg/L) 0.75	1,2-EDB (mg/L) 0.0001	1,2-EDC (mg/L) 0.01	Naphthalene (mg/L) 0.03	Methylnaphthalene (mg/L) 0.03	Methylnaphthalene (mg/L) 0.03
NMWQCC GW Si           MW-8           MW-8	tandards 10/24/07 10/28/08 10/29/09 12/31/09 09/08/10 09/22/11 09/27/12	0.01 < 0.0005 < 0.005 < 0.001 < 0.001	0.75 < 0.0008 < 0.005	<b>0.75</b>						
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	10/24/07 10/28/08 10/29/09 12/31/09 09/08/10 09/22/11 09/27/12	< 0.0005 < 0.005 < 0.001 < 0.001	< 0.0008 < 0.005	< 0.0007	0.75	0.0001	0.01	0.03	0.03	0.03
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	10/28/08 10/29/09 12/31/09 09/08/10 09/22/11 09/27/12	< 0.005 < 0.001 < 0.001	< 0.005						0.03	0.03
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	10/28/08 10/29/09 12/31/09 09/08/10 09/22/11 09/27/12	< 0.005 < 0.001 < 0.001	< 0.005							
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	10/29/09 12/31/09 09/08/10 09/22/11 09/27/12	< 0.001 < 0.001		< 0.005	< 0.0008			< 0.001		< 0.001
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	12/31/09 09/08/10 09/22/11 09/27/12	< 0.001	< 0.001	< 0.005	< 0.005 < 0.003			< 0.005 < 0.01		< 0.005 < 0.01
MW-8 MW-8 MW-8 MW-8 MW-8 MW-8	09/08/10 09/22/11 09/27/12		< 0.001	< 0.001	< 0.003			< 0.01		
MW-8 MW-8 MW-8 MW-8 MW-8	09/22/11 09/27/12		< 0.001	0.0032	< 0.001	< 0.001	< 0.001	< 0.0054	< 0.0054	< 0.0054
MW-8 MW-8 MW-8 MW-8	09/27/12	< 0.001	< 0.001	0.0032	< 0.003	< 0.0005	< 0.0005	< 0.00	< 0.0034	< 0.0034
MW-8 MW-8 MW-8		< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	< 0.0005	< 0.0005		
MW-8 MW-8		< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
	09/23/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-8	03/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
	09/10/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-8	04/01/11	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
	09/15/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00045		
MW-8	03/17/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
	09/20/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00050	< 0.00050	< 0.00050
	04/05/17	< 0.001	< 0.001	< 0.001	< 0.003		< 0.001	< 0.0005		
	10/20/17	< 0.001	< 0.001	< 0.001	< 0.003	<0.00003	< 0.001	<0.00091	< 0.0005	< 0.0005
	03/27/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.0005	< 0.00049	< 0.00049	< 0.00049
	09/17/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-8	03/26/19	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000031	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-9	10/25/07	0.0008	< 0.0008	< 0.0007	< 0.0008			< 0.001		0.005
	10/29/08	< 0.005	< 0.005	< 0.005	< 0.005			< 0.005		< 0.005
	10/29/09	< 0.001	< 0.001	< 0.001	< 0.003			< 0.01		< 0.01
	12/31/09	< 0.001	< 0.001	< 0.001	< 0.001		0.13			
	01/04/10	< 0.001	< 0.001	< 0.001	< 0.001		0.13			
MW-9	01/04/10						0.14			
MW-9	03/10/10	< 0.001	< 0.001	0.0025	< 0.001		0.1			
	06/30/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.11			
	09/09/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.09	< 0.0053	< 0.0053	< 0.0053
	12/29/10	< 0.001	< 0.001	0.0012	< 0.001	< 0.001	0.097			
	03/31/11	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.097	< 0.001		
	07/01/11	0.00042	0.00036	0.002	< 0.0030	< 0.0010	0.245	< 0.0053	< 0.0053	< 0.0053
	09/23/11	< 0.001	< 0.001	0.0015	< 0.003	< 0.0005	0.0944	< 0.01		
	12/22/11	0.00036J	< 0.001	0.0012	< 0.003	< 0.0005	0.0836	< 0.01		
	04/05/12	< 0.001	0.0015	0.125	0.0089	0.0023	0.0804	< 0.00053		
	06/28/12 06/28/12	< 0.001 < 0.001	< 0.001 < 0.001	< 0.001 < 0.001	<0.003 <0.003	< 0.0005 < 0.0005	0.0748 0.0714	< 0.0005		
	09/28/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.0653	< 0.0005		
	12/04/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.064	< 0.0005	< 0.0005	< 0.0005
	03/28/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.063	< 0.0005	< 0.0005	< 0.0005
	09/23/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0743	< 0.0005		
	09/23/13	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0768			
	03/11/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0565	< 0.0005		
	09/10/14	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.055	< 0.0005		
	03/09/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0549	< 0.0005		
	03/09/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0669			
MW-9	09/16/15	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0487	< 0.00045		
	01/11/16	< 0.001	< 0.001	< 0.001	< 0.003		0.0479			
	03/18/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000030	0.0586	< 0.00045	< 0.00045	< 0.00045
	09/21/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.001	0.0479	< 0.00050	< 0.00050	< 0.00050
	04/06/17	< 0.001	< 0.001	< 0.001	< 0.003		0.0467	< 0.0005		
	10/20/17	< 0.001	< 0.001	< 0.001	< 0.003	<0.00003	0.0388	< 0.0005	< 0.0005	< 0.0005
	10/20/17	< 0.001	< 0.001	< 0.001	< 0.003		0.0422			
	03/28/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000029	0.0354	< 0.00045	< 0.00045	< 0.00045
	09/18/18	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	0.0345	< 0.00045	< 0.00045	< 0.00045
MW-9	03/26/19	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000031	0.0308	< 0.00045	< 0.00045	< 0.00045

Well ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	1,2-EDB (mg/L)	1,2-EDC (mg/L)	Naphthalene (mg/L)	1- Methylnaphthalene (mg/L)	2- Methylnaphthalen (mg/L)
	W Standards	0.01	0.75	0.75	0.75	0.0001	0.01	0.03	0.03	0.03
MW-10	04/22/10	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001		< 0.001		
MW-10	06/30/10	0.0014	0.0011	0.0013	0.0032	0.047	< 0.001			
MW-10	09/09/10	0.017	0.01	0.012	0.0493	0.11	< 0.001	< 0.0056	< 0.0056	< 0.0056
MW-10	12/29/10	0.051	0.018	0.75	0.111	0.098	< 0.001			
MW-10	03/31/11	0.055	0.016	0.13	0.039	0.11	0.0012	0.0013		
MW-10	06/30/11	0.235	1.46	141	9.15	0.77	0.0012	0.372	0.355 / 0.427	0.246
MW-10*	06/30/11	0.188	0.756	44.3	9.24	0.789	0.0012			
MW-10	09/23/11	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-10	12/22/11	0.0976J	0.318	129.0	2.020	0.316	<0.050	0.0816J		
MW-10	03/13/12	Destroyed								
MW-11	04/01/11	< 0.001	< 0.001	0.0011	< 0.001	< 0.001	0.19	< 0.001		
MW-11	07/01/11	0.00042	< 0.0010	< 0.0010	< 0.0030	< 0.0010	0.116	< 0.0053	< 0.0053	< 0.0053
MW-11	09/23/11	< 0.005	< 0.005	< 0.005	< 0.015	< 0.0025	0.266	< 0.05		
MW-11*	09/23/11	< 0.005	< 0.005	< 0.005	< 0.015	< 0.0025	0.291	< 0.05		
MW-11	12/22/11	0.00048J	0.00021J	0.0049	< 0.003	< 0.0005	0.287	< 0.010		
MW-11*	12/22/11	< 0.005	0.0059	< 0.005	< 0.015	< 0.005	0.299	< 0.050		
MW-11	04/05/12	< 0.005	< 0.005	0.0834	< 0.015	0.00070	0.211	< 0.00053		
MW-11	06/28/12	< 0.001	< 0.001	0.002	< 0.003	< 0.0005	0.298	< 0.0005		
MW-11	09/28/12	< 0.001	< 0.001	0.0013	< 0.003	< 0.0005	0.260	< 0.0005		
MW-11*	09/28/12	0.0019	< 0.001	0.0013	< 0.003	< 0.0005	0.260			
MW-11	12/04/12	< 0.002	< 0.002	< 0.002	< 0.006	< 0.001	0.30	0.00059	<0.0005	0.00055
MW-11	12/04/12	< 0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.32			
MW-11	03/28/13	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.345	< 0.0005	< 0.0005	< 0.0005
MW-11*	03/28/13	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.348			
MW-11	09/24/13	< 0.001	< 0.001	0.0011	< 0.003	< 0.001	0.432	< 0.0005		
MW-11	03/11/14	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.281	0.0006		
MW-11*	03/11/14	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.284			
MW-11	09/10/14	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.3	< 0.0005		
MW-11*	09/10/14	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.29			
MW-11	03/09/15	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.269	< 0.0005		
MW-11	09/16/15	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.263	< 0.00045		
MW-11	01/11/16	< 0.005	< 0.005	< 0.005	< 0.015		0.317			
MW-11	03/18/16	< 0.005	< 0.005	< 0.005	< 0.015	< 0.000031	0.321	< 0.00045	< 0.00045	< 0.00045
MW-11	09/21/16	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.288	< 0.00045	0.00069	< 0.00045
MW-11*	09/21/16	< 0.005	< 0.005	< 0.005	< 0.015	< 0.005	0.29			
MW-11 MW-11	04/06/17	< 0.005	0.0067	< 0.005	< 0.015		0.283	< 0.0005		
MW-11 MW-11	10/20/17 03/28/18	< 0.001 < 0.001	< 0.001	< 0.001	< 0.003 < 0.003	< 0.00003	0.18	< 0.0005	0.00069	< 0.0005
	03/28/18	< 0.001 0.0056	< 0.001	< 0.001		< 0.00003	0.224 0.22	< 0.00051	< 0.00051	< 0.00051 <0.0005
MW-11 MW-11	03/28/19	< 0.0056	< 0.005 < 0.005	< 0.005 < 0.005	< 0.015 < 0.015	< 0.00003 < 0.000031	0.22	<0.0005 0.00056	<0.0005 < 0.00045	< 0.0005
	03/26/19	< 0.005	< 0.005	< 0.005	< 0.015	< 0.000031	0.150	0.00056	< 0.00045	< 0.00045
MW-12	12/22/11	0.674	0.745	121.0	4.370	1.610	< 0.050	0.0725J		
MW-12	04/04/12	0.750	0.634	72.9	3.570	1.610	< 0.100	0.0386		
MW-12	06/28/12	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	09/27/12	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	12/04/12	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	03/27/13	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	09/24/13	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	03/11/14	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	09/11/14	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	03/10/15	0.210	0.198	37.2	2.31	0.217	< 0.1	0.162		
MW-12	09/16/15	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	03/18/16	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	09/20/16	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL	NS/LNAPL
MW-12	04/06/17	0.226	18.2	0.523	3.65	0.00029	< 0.010	0.0251		
MW-12	10/20/17	< 0.1	4.5	0.152	0.932	0.00013	< 0.1	0.0199	0.0069	0.0064
MW-12	03/29/18	0.0862	1.21	0.253	1.69	0.0003	< 0.025	0.0187	0.0073	0.0073
MW-12*	03/29/18	0.0882	1.25	0.267	1.730	0.00031	< 0.025	NS	NS	NS
MW-12	09/18/18	0.108	0.216	0.302	1.81	<0.00003	< 0.020	0.0127	0.0055	0.0052
MW-12	03/28/19	0.0664	0.223	0.273	1.77	0.000070	< 0.010	0.0127	0.006	0.006
···· · · · · · · · · · · · · · · · · ·			0.169	0.290	1.83	0.000052	< 0.001	0.0141	0.0062	0.0062

Well ID         Sample           NMWQCC GW Standar           MW-13         04/04           MW-13         04/04           MW-13         04/04           MW-13         04/04           MW-13         04/04           MW-13         09/27           MW-13         09/27           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/10           MW-13         03/11           MW-13         03/11           MW-13         03/12           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         04/28           MW-14         09/28           MW-14         09/28           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         09/28           MW-14	le Date         (n           ards         (n           b4/12         0           c7/12         NS/           c7/13         NS/           c2//13         NS/           c4/13         0.           c1/1/4         0.           c6/15         0.           c8/16         0.           c2/1/16         0.           c6/17         0.           c9/18         0.           c8/19         0.           c9/18         0.           c9/11         0.00	LNAPL	Toluene (mg/L) 0.75 0.415 0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.051 0.168 0.169 0.0997 0.0977 0.0793 0.127 NS 0.023 <0.005 <0.005 0.001	Ethylbenzene (mg/L) 0.75 32.0 3.42 3.30 8.56 NS/LNAPL NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907 0.0934	Total Xylenes (mg/L) 0.75 2.34 0.381 0.449 0.693 NS/LNAPL NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112 0.045	1,2-EDB (mg/L) 0.0001 0.687 0.106  0.407 NS/LNAPL NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00035 NS 0.00036 0.00023 0.00024 0.00019	1,2-EDC (mg/L) 0.01 < 0.025 < 0.0025  < 0.005 NS/LNAPL NS/LNAPL NS/LNAPL < 0.01 < 0.01 < 0.001 < 0.005 < 0.005	(mg/L) 0.03 0.0166J <0.00056  0.023 NS/LNAPL NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	1- Methylnaphthalene (mg/L) 0.03    NS/LNAPL NS/LNAPL NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0226  0.0224  NS 0.0099 0.0117 0.0131	(mg/L) 0.03   NS/LNAPL NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0296  0.0317  NS 0.0132 0.014
NMWQCC GW Standaa           MW-13         12/28           MW-13         04/04           MW-13         04/04           MW-13         06/28           MW-13         09/27           MW-13         09/27           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/21           MW-13         03/11           MW-13         03/13           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         02/29           MW-14         02/29           MW-14         02/29           MW-14         02/24           MW-14         02/27           MW-14         02/27           MW-14         02/27           MW-14         02/24 <th>ards         ()           28/11         0           04/12         0           04/12         0           28/12         0           27/12         NS/           27/12         NS/           27/13         NS/           27/14/12         NS/           27/13         NS/           27/14         0.           11/14         0           10/15         0.           18/16         0.           21/16         0.           28/17         0.           28/18         0.           99/18         0.           99/18         0.           28/19         0.</th> <th>0.01 0.498 0.117 0.153 0.288 //LNAPL   1 //LNAPL   1 //LNAPL   1 0.606 0.0337 0.044 0.0702 0.0688 0.0451 0.0460 0.0246 0.0246 0.0192 NS 0.079 0.0066 0.0071 0.0049</th> <th>0.75 0.415 0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.169 0.0997 0.0997 0.0997 0.0997 0.0997 0.0793 0.127 NS 0.0023 &lt;0.005 &lt;0.005 0.0013</th> <th>0.75 32.0 3.42 3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907</th> <th>0.75 2.34 0.381 0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112</th> <th>0.0001 0.687 0.106  0.407 NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 &lt; 0.005 0.002 0.0014  &lt; 0.0005 NS 0.00035 NS 0.00035 NS 0.00023 0.00024</th> <th>0.01 &lt; 0.025 &lt; 0.005 NS/LNAPL NS/LNAPL &lt; 0.01 &lt; 0.01 &lt; 0.001 &lt; 0.005 &lt; 0.005 &lt; 0.005 &lt; 0.005 NS &lt; 0.005 NS &lt; 0.005 &lt; 0.005 <!--</th--><th>0.03 0.0166J &lt;0.00056  0.023 NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323</th><th>0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0226  0.0244  NS 0.0099 0.0117</th><th>0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014</th></th>	ards         ()           28/11         0           04/12         0           04/12         0           28/12         0           27/12         NS/           27/12         NS/           27/13         NS/           27/14/12         NS/           27/13         NS/           27/14         0.           11/14         0           10/15         0.           18/16         0.           21/16         0.           28/17         0.           28/18         0.           99/18         0.           99/18         0.           28/19         0.	0.01 0.498 0.117 0.153 0.288 //LNAPL   1 //LNAPL   1 //LNAPL   1 0.606 0.0337 0.044 0.0702 0.0688 0.0451 0.0460 0.0246 0.0246 0.0192 NS 0.079 0.0066 0.0071 0.0049	0.75 0.415 0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.169 0.0997 0.0997 0.0997 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.75 32.0 3.42 3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.75 2.34 0.381 0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.0001 0.687 0.106  0.407 NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 NS 0.00035 NS 0.00035 NS 0.00023 0.00024	0.01 < 0.025 < 0.005 NS/LNAPL NS/LNAPL < 0.01 < 0.01 < 0.001 < 0.005 < 0.005 < 0.005 < 0.005 NS < 0.005 NS < 0.005 < 0.005 </th <th>0.03 0.0166J &lt;0.00056  0.023 NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323</th> <th>0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0226  0.0244  NS 0.0099 0.0117</th> <th>0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014</th>	0.03 0.0166J <0.00056  0.023 NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0226  0.0244  NS 0.0099 0.0117	0.03   NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         12/28           MW-13         04/04           MW-13*         04/04           MW-13*         04/04           MW-13*         04/04           MW-13*         09/27           MW-13         09/27           MW-13         09/24           MW-13         09/24           MW-13         09/24           MW-13         09/24           MW-13         09/21           MW-13         09/11           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/09           MW-14         09/28           MW-14         09/27           MW-14         09/28           MW-14         09/27           MW-14         09/28	28/11         0           124/12         0           124/12         0           127/12         NS/           127/12         NS/           127/12         NS/           127/12         NS/           127/13         NS/           127/14         0           11/14         0           11/14         0           11/14         0           16/15         0           18/16         0           18/16         0           123/17         0           123/17         0           129/18         0           0         0           19/18         0           0         0           19/18         0           0         0           19/18         0           0         0           129/11         0.0	0.498 0.117 0.153 0.288 //NAPL   1 //NAPL   1 //NAPL   1 //NAPL   1 0.606 0.0337 0.044 0.0451 0.0451 0.0451 0.0460 0.0246 0.0192 NS 0.0079 0.0066 0.0071 0.0049	0.415 0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.0997 0.0997 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 0.0013	32.0 3.42 3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	2.34 0.381 0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.687 0.106  0.407 NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00035 NS 0.00036 0.00023 0.00024	< 0.025 < 0.0025  <0.005 NS/LNAPL NS/LNAPL < 0.01 < 0.01 < 0.002 < 0.005 < 0.005 < 0.0005 < 0.0005 NS < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005	0.0166J <0.00056  0.023 NS/LNAPL NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	  NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	  NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         04/04           MW-13         06/28           MW-13         06/28           MW-13         09/27           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         09/24           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/12           MW-13         03/13           MW-13         09/24           MW-13         09/21           MW-13         04/06           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/24           MW-14         09/24           MW-14         09/27           MW-14         09/24	14/12         0           04/12         0           028/12         0           027/12         NS/           027/12         NS/           027/12         NS/           027/13         NS/           027/13         NS/           027/13         NS/           024/13         0.           11/14         0.           11/14         0.           10/15         0.           16/15         0.           18/16         0.           18/16         0.           19/18         0.           19/18         0.           19/18         0.           28/19         0.	0.117 0.153 0.288 /LNAPL   / /LNAPL   / .0606 .0337 0.044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.069 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	3.42 3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.381 0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.106  NS/LNAPL NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.0005 NS 0.00035 NS 0.00036 0.00023 0.00024	< 0.0025  <0.005 NS/LNAPL NS/LNAPL NS/LNAPL < 0.01 < 0.01 < 0.002 < 0.005 < 0.005 < 0.0005 < 0.0005 NS < 0.0005 < 0.000	<0.00056  0.023 NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	 NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	  NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         04/04           MW-13         06/28           MW-13         06/28           MW-13         09/27           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         09/24           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/11           MW-13         03/12           MW-13         03/13           MW-13         09/24           MW-13         09/21           MW-13         04/06           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/24           MW-14         09/24           MW-14         09/27           MW-14         09/24	14/12         0           04/12         0           028/12         0           027/12         NS/           027/12         NS/           027/12         NS/           027/13         NS/           027/13         NS/           027/13         NS/           024/13         0.           11/14         0.           11/14         0.           10/15         0.           16/15         0.           18/16         0.           18/16         0.           19/18         0.           19/18         0.           19/18         0.           28/19         0.	0.117 0.153 0.288 /LNAPL   / /LNAPL   / .0606 .0337 0.044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0377 0.0421 0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.069 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	3.42 3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.381 0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.106  NS/LNAPL NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.0005 NS 0.00035 NS 0.00036 0.00023 0.00024	< 0.0025  <0.005 NS/LNAPL NS/LNAPL NS/LNAPL < 0.01 < 0.01 < 0.002 < 0.005 < 0.005 < 0.0005 < 0.0005 NS < 0.0005 < 0.000	<0.00056  0.023 NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	 NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	  NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13*         04/04           MW-13         06/28           MW-13         09/27           MW-13         09/27           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         09/24           MW-13         03/27           MW-13         03/21           MW-13         09/11           MW-13         09/11           MW-13         09/12           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         09/28           MW-14         09/28           MW-14         09/28           MW-14         03/27           MW-14         09/24	04/12         0           28/12         0           27/12         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/14         NS/           27/15         NS/           27/16         0.           11/14         0           10/15         0.           16/15         0.           18/16         0.           28/16         0.           28/17         0.           28/18         0.           99/18         0.           28/19         0.           29/11         0.00	0.153 0.288 /LNAPL   / /LNAPL   / /LNAPL   / 0.0606 0.0337 0.044 0.0702 0.0688 0.0451 0.0460 0.0246 0.0192 NS 0.0079 0.0066 0.0071 0.0049	0.0421 0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.169 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	3.30 8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.449 0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	 0.407 NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00035 NS 0.00036 0.00023 0.00024	 <0.005 NS/LNAPL NS/LNAPL < 0.01 < 0.001 < 0.002 < 0.005 < 0.005 < 0.005 < 0.005 NS < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005 < 0.0005		 NS/LNAPL NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	 NS/LNAPL NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         06/28           MW-13         09/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/27           MW-13         03/10           MW-13         03/10           MW-13         03/10           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         09/24	28/12         0           27/12         NS/           27/13         NS/           21/14         0.           00/15         0.           18/16         0.           28/16         0.           28/16         0.           28/17         0.           28/18         0.           99/18         0.           28/19         0.           29/11         0.00	0.288         //LNAPL         I           //LNAPL         I           //LNAPL         I           0.0606         0.0337           0.044         0.0608           .0451         0.0688           .0451         0.0440           .0246         0.0192           NS         0.0079           .00066         0.0071           .00049         0.0449	0.149 NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.059 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	8.56 NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.693 NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00035 NS 0.00036 0.00023 0.00024	NS/LNAPL NS/LNAPL < 0.01 < 0.001 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 NS < 0.0005 NS < 0.0005 < 0.0005 < 0.0005 < 0.005	NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	 NS/LNAPL NS/LNAPL   0.0226  0.0244  NS 0.0099 0.0117	 NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         09/27           MW-13         12/04           MW-13         03/27           MW-13         09/24           MW-13         09/24           MW-13         09/24           MW-13         09/24           MW-13         09/16           MW-13         09/11           MW-13         09/16           MW-13         09/16           MW-13         09/27           MW-13         09/18           MW-13         09/26           MW-13         09/21           MW-13         09/21           MW-13         09/21           MW-13         09/21           MW-13         03/28           MW-14         12/29           MW-14         02/28           MW-14         02/28           MW-14         02/27           MW-14         02/27           MW-14         02/27           MW-14         02/27           MW-14         02/27           MW-14         09/24	27/12         NS/           04/12         NS/           04/12         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/14         0.           11/14         0.           10/15         0.           16/15         0.           88/16         0.           21/16         0.           06/17         0.           19/18         0.           99/18         0.           28/19         0.           29/11         0.00	/LNAPL     /LNAPL     /LNAPL     0.006 0.0337 0.044 0.0702 0.0688 0.0451 0.0688 0.0451 0.0668 0.0079 0.0066 0.0071 0.0049	NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.169 0.0997 0.0977 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00035 NS 0.00036 0.00023 0.00024	NS/LNAPL NS/LNAPL < 0.01 < 0.001 < 0.005 < 0.005 < 0.005 < 0.005 < 0.005 NS < 0.0005 NS < 0.0005 < 0.0005 < 0.0005 < 0.005	NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	NS/LNAPL NS/LNAPL     0.0296  0.0317  NS 0.0132 0.014
MW-13         12/04           MW-13         03/27           MW-13         09/24           MW-13         03/11           MW-13         09/14           MW-13         09/16           MW-13         09/16           MW-13         09/16           MW-13         09/16           MW-13         09/17           MW-13         09/21           MW-13         04/06           MW-13         09/29           MW-13         09/29           MW-13         09/29           MW-13         09/29           MW-13         03/28           MW-14         12/29           MW-14         09/28           MW-14         09/28           MW-14         09/27           MW-14         09/24           MW-14         09/27           MW-14         09/26	04/12         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           27/13         NS/           11/14         0.           10/15         0.           16/15         0.           18/16         0.           21/16         0.           06/17         0.           13/17         28/18           19/18         0.           99/18         0.           28/19         0.	/LNAPL     /LNAPL     .0606 0.0337 0.044 .0702 0.0688 0.0451 0.0688 .0451 0.0460 .0246 .0192 NS 0.079 0.0066 .0071 .0049	NS/LNAPL NS/LNAPL 0.0978 0.0248 0.051 0.168 0.169 0.0997 0.0977 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	NS/LNAPL NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	NS/LNAPL NS/LNAPL 1.06 0.862 0.76 1.27 0.314 0.245 0.265 NS 0.131 0.107 0.112	NS/LNAPL NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	NS/LNAPL NS/LNAPL < 0.01 < 0.002 < 0.005 < 0.005  < 0.0005 < 0.0005 NS < 0.0005 < 0.005 NS < 0.005 < 0.0	NS/LNAPL NS/LNAPL 0.0821 0.0589 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0326 0.0292 0.0323	NS/LNAPL NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	NS/LNAPL NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         03/27           MW-13         09/24           MW-13         03/11           MW-13         09/11           MW-13         09/11           MW-13         09/16           MW-13         09/16           MW-13         03/10           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         09/21           MW-13         04/06           MW-13         09/19           MW-13         09/19           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         09/28           MW-14         09/27           MW-14         09/27           MW-14         02/07           MW-14         02/20	27/13         NS/           24/13         0.           11/14         0.           11/14         0.           10/15         0.           16/15         0.           18/16         0.           18/16         0.           21/16         0.           23/17         0.           19/18         0.           19/18         0.           28/19         0.	/LNAPL   .0606 .0337 .044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	NS/LNAPL 0.0978 0.0248 0.051 0.168 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	NS/LNAPL 0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	NS/LNAPL 1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	NS/LNAPL 0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	NS/LNAPL < 0.01 < 0.01 < 0.002 < 0.005 < 0.005  < 0.0005 < 0.005 NS < 0.0005 < 0.005 < 0.005 < 0.005 < 0.005	NS/LNAPL 0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	NS/LNAPL    0.0226  0.0244  NS 0.0099 0.0117	NS/LNAPL    0.0296  0.0317  NS 0.0132 0.014
MW-13         09/24           MW-13         03/11           MW-13         09/11           MW-13         09/16           MW-13         09/16           MW-13         09/16           MW-13         09/16           MW-13         09/17           MW-13         09/18           MW-13         09/21           MW-13         04/06           MW-13         04/06           MW-13         01/23           MW-13         03/18           MW-13         04/06           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         04/04           MW-14         06/28           MW-14         09/24           MW-14         02/02           MW-14         03/27           MW-14         03/27           MW-14         09/24	24/13         0.           11/14         0.           11/14         0.           11/14         0.           11/14         0.           11/15         0.           16/15         0.           18/16         0.           18/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/16         0.           11/17         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0.           11/18         0. <td>.0606 .0337 0.044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049</td> <td>0.0978 0.0248 0.051 0.168 0.0997 0.0977 0.0793 0.127 NS 0.0023 &lt;0.005 &lt;0.005 0.0013</td> <td>0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907</td> <td>1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112</td> <td>0.0632 0.0113 0.0036 &lt; 0.005 0.002 0.0014  &lt; 0.0005 0.00035 NS 0.00036 0.00023 0.00024</td> <td>&lt; 0.01 &lt; 0.01 &lt; 0.002 &lt; 0.005 &lt; 0.005  &lt; 0.0005 &lt; 0.005 NS &lt; 0.0005 &lt; 0.005 &lt; 0.005 &lt; 0.005</td> <td>0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323</td> <td>  0.0226  0.0244  NS 0.0099 0.0117</td> <td>   0.0296  0.0317  NS 0.0132 0.014</td>	.0606 .0337 0.044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0978 0.0248 0.051 0.168 0.0997 0.0977 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.531 0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	1.06 0.862 0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.0632 0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.01 < 0.01 < 0.002 < 0.005 < 0.005  < 0.0005 < 0.005 NS < 0.0005 < 0.005 < 0.005 < 0.005	0.0821 0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	  0.0226  0.0244  NS 0.0099 0.0117	   0.0296  0.0317  NS 0.0132 0.014
MW-13         03/11           MW-13         09/11           MW-13         03/10           MW-13         03/16           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/28           MW-13         01/23           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         04/24           MW-14         04/24           MW-14         02/29           MW-14         02/24           MW-14         09/24	11/14         0.           11/14         0           10/15         0.           16/15         0.           18/16         0.           18/16         0.           11/16         0.	.0337 0.044 .0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0248 0.051 0.168 0.0997 0.0997 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.338 0.074 0.0416 0.0228 0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.862 0.76 1.27 0.364 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.0113 0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.01 < 0.002 < 0.005 < 0.005  < 0.0005 < 0.005 NS < 0.0005 < 0.005 < 0.005 < 0.005	0.0589 0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	  0.0226  0.0244  NS 0.0099 0.0117	  0.0296  0.0317  NS 0.0132 0.014
MW-13         09/11           MW-13         03/10           MW-13         03/16           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         03/18           MW-13         09/21           MW-13         04/06           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/24           MW-14         09/28           MW-14         03/27           MW-14         03/27           MW-14         09/24	11/14         0           10/15         0.           16/15         0.           18/16         0.           18/16         0.           18/16         0.           19/17         0.           19/18         0.           19/18         0.           19/18         0.           28/19         0.	0.044 0.0702 0.0688 0.0451 0.0460 0.0246 0.0192 NS 0.0079 0.0066 0.0071 0.0049	0.051 0.168 0.169 0.0997 0.0773 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.074 0.0416 0.0228 0.0111 0.013 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.76 1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.0036 < 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.002 < 0.005 < 0.005  < 0.0005 < 0.0005 NS < 0.0005 < 0.0005 < 0.0005 < 0.0005	0.0389 0.0673 0.0561 0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	  0.0226  0.0244  NS 0.0099 0.0117	  0.0296  0.0317  NS 0.0132 0.014
MW-13         03/10           MW-13         09/16           MW-13         03/18           MW-13         03/18           MW-13         03/16           MW-13         03/18           MW-13         09/21           MW-13         04/06           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/24           MW-14         03/27           MW-14         03/27           MW-14         03/27           MW-14         09/24	10/15         0.           16/15         0.           18/16         0.           18/16         0.           11/16         0.           121/16         0.           123/17         0.           123/17         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/19         0.	.0702 .0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.168 0.169 0.0997 0.0773 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0416 0.0228 0.0111 0.0053 0.0908 NS 0.107 0.0876 0.0907	1.27 0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	< 0.005 0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.005 < 0.005 < 0.005  < 0.0005 < 0.0005 NS < 0.0005 < 0.0005 < 0.005	0.0673 0.0561 0.0516  0.041 NS 0.0326 0.0292 0.0323	 0.0226  0.0244  NS 0.0099 0.0117	 0.0296  0.0317  NS 0.0132 0.014
MW-13         09/16           MW-13         03/18           MW-13         03/18           MW-13         09/21           MW-13         09/21           MW-13         09/21           MW-13         09/21           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         06/28           MW-14         09/24           MW-14         09/28           MW-14         03/27           MW-14         09/24	16/15         0.           18/16         0.           18/16         0.           18/16         0.           18/16         0.           18/16         0.           19/17         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.           19/18         0.	.0688 .0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.169 0.0997 0.0773 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0228 0.0111 0.013 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.764 0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.002 0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.005 < 0.005  < 0.0005 < 0.005 NS < 0.0005 < 0.005 < 0.005	0.0561 0.0516  0.041 NS 0.0326 0.0292 0.0323	0.0226  0.0244  NS 0.0099 0.0117	0.0296  0.0317  NS 0.0132 0.014
MW-13         03/18           MW-13         03/18           MW-13         09/21           MW-13         04/06           MW-13         04/06           MW-13         03/28           MW-13         09/19           MW-13         03/28           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         09/28           MW-14         09/28           MW-14         12/04           MW-14         09/27           MW-14         09/24	8/16         0.           18/16         0.           21/16         0.           06/17         0.           13/17         28/18           28/18         0.           19/18         0.           9/18         0.           28/19         0.	.0451 .0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0997 0.0977 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0111 0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.327 0.314 0.245 0.265 NS 0.131 0.107 0.112	0.0014  < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	< 0.005  < 0.0005 < 0.005 NS < 0.0005 < 0.005 < 0.005	0.0516  0.0510 0.041 NS 0.0326 0.0292 0.0323	 0.0244  NS 0.0099 0.0117	 0.0317  NS 0.0132 0.014
MW-13*         03/18           MW-13         09/21           MW-13         04/06           MW-13         10/23           MW-13         09/19           MW-13*         09/19           MW-13*         09/19           MW-13*         09/19           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         12/04           MW-14         09/28           MW-14         09/27           MW-14         09/24	8/16         0.           21/16         0.           06/17         0.           33/17         28/18           28/18         0.           19/18         0.           28/19         0.           28/19         0.	.0460 .0246 .0192 NS .0079 .0066 .0071 .0049	0.0977 0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0113 0.0053 0.0908 NS 0.107 0.0876 0.0907	0.314 0.245 0.265 NS 0.131 0.107 0.112	 < 0.0005 0.00035 NS 0.00036 0.00023 0.00024	 < 0.0005 < 0.005 NS < 0.0005 <0.005 <0.005	 0.0510 0.041 NS 0.0326 0.0292 0.0323	 0.0244  NS 0.0099 0.0117	 0.0317  NS 0.0132 0.014
MW-13         09/21           MW-13         04/06           MW-13         10/23           MW-13         03/28           MW-13         09/19           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         09/28           MW-14         09/28           MW-14         09/28           MW-14         09/28           MW-14         09/28           MW-14         09/24	21/16         0.           06/17         0.           23/17         28/18           28/18         0.           19/18         0.           19/18         0.           28/19         0.           28/19         0.	.0246 .0192 NS .0079 .0066 .0071 .0049	0.0793 0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0053 0.0908 NS 0.107 0.0876 0.0907	0.245 0.265 NS 0.131 0.107 0.112	< 0.0005 <b>0.00035</b> NS 0.00036 0.00023 0.00024	< 0.005 NS < 0.0005 <0.005 <0.005	0.041 NS 0.0326 0.0292 0.0323	 NS 0.0099 0.0117	 NS 0.0132 0.014
MW-13         04/06           MW-13         10/23           MW-13         03/28           MW-13         09/19           MW-13         03/28           MW-14         03/28           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         09/24	06/17 0. 23/17 28/18 0. 19/18 0. 19/18 0. 28/19 0. 29/11 0.0	.0192 NS .0079 .0066 .0071 .0049	0.127 NS 0.0023 <0.005 <0.005 0.0013	0.0908 NS 0.107 0.0876 0.0907	0.265 NS 0.131 0.107 0.112	0.00035 NS 0.00036 0.00023 0.00024	< 0.005 NS < 0.0005 <0.005 <0.005	0.041 NS 0.0326 0.0292 0.0323	 NS 0.0099 0.0117	 NS 0.0132 0.014
MW-13         10/23           MW-13         03/28           MW-13         09/19           MW-13         03/28           MW-14         03/28           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         03/27           MW-14         09/24	23/17 28/18 0. 19/18 0. 19/18 0. 28/19 0. 29/11 0.0	NS .0079 .0066 .0071 .0049	NS 0.0023 <0.005 <0.005 0.0013	NS 0.107 0.0876 0.0907	NS 0.131 0.107 0.112	NS 0.00036 0.00023 0.00024	NS < 0.0005 <0.005 <0.005	NS 0.0326 0.0292 0.0323	0.0099 0.0117	0.0132 0.014
MW-13         03/28           MW-13         09/19           MW-13         09/19           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/29           MW-14         06/28           MW-14         09/28           MW-14         09/24           MW-14         03/27           MW-14         09/24	19/18 0. 19/18 0. 28/19 0. 29/11 0.0	.0066 .0071 .0049	<0.005 <0.005 0.0013	0.0876 0.0907	0.107 0.112	0.00023 0.00024	<0.005 <0.005	0.0292 0.0323	0.0117	0.014
MW-13         09/19           MW-13*         09/19           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/29           MW-14         09/28           MW-14         12/20           MW-14         09/28           MW-14         03/27           MW-14         09/24	19/18 0. 28/19 0. 29/11 0.0	.0071 .0049	<0.005 0.0013	0.0907	0.112	0.00024	<0.005	0.0292 0.0323		
MW-13*         09/19           MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/20           MW-14         09/28           MW-14         09/28           MW-14         03/27           MW-14         09/24	19/18 0. 28/19 0. 29/11 0.0	.0071 .0049	<0.005 0.0013	0.0907				0.0323	0.0131	
MW-13         03/28           MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/04           MW-14         12/04           MW-14         03/27           MW-14         03/27           MW-14         09/24	28/19 0. 29/11 0.0			0.0934	0.045	0.00019	< 0.001			0.0159
MW-14         12/29           MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/04           MW-14         03/27           MW-14         09/24		00014J					< 0.00 I	0.030	0.0105	0.0147
MW-14         04/04           MW-14         06/28           MW-14         09/28           MW-14         12/04           MW-14         03/27           MW-14         09/24		00014J	< 0.001							
MW-14         06/28           MW-14         09/28           MW-14         12/04           MW-14         03/27           MW-14         09/24	)4/12 <		< 0.001	0.00092J	< 0.003	< 0.0005	< 0.0005	0.0021J		
MW-1409/28MW-1412/04MW-1403/27MW-1409/24	· · · · <b>-</b>	0.001	0.0024	0.161	0.0146	0.00089	< 0.0005	< 0.0005		
MW-14 12/04 MW-14 03/27 MW-14 09/24	28/12 <	0.001	< 0.001	0.0015	< 0.003	< 0.0005	< 0.0005	< 0.0005		
MW-14 03/27 MW-14 09/24	28/12 <	0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.0020	< 0.0005		
MW-14 09/24	)4/12 <	0.001	< 0.001	< 0.001	< 0.003	< 0.0005	0.00053	< 0.0005	< 0.0005	< 0.0005
	27/13 <	0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005	< 0.0005	< 0.0005
	24/13 <	0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-14 03/11		0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.0005		
MW-14 09/11		0.001	< 0.001	< 0.001	< 0.003	0.016	< 0.001	< 0.0005		
MW-14 03/10		0.001	0.0027	0.0991	0.0334	0.0619	< 0.001	0.00073		
MW-14 09/16		0.001	< 0.001	< 0.001	< 0.003	0.0776	0.0012	< 0.00045		
MW-14 03/17		0.001	< 0.001	< 0.001	< 0.003	0.0557	0.0018	< 0.00045	< 0.00045	< 0.00045
MW-14 09/21		0.001	< 0.001	< 0.001	< 0.003	0.0501	0.0020	< 0.00045	< 0.00045	< 0.00045
MW-14 04/06		0.001	< 0.001	< 0.001	< 0.003		< 0.001	< 0.0005		
MW-14 10/20		0.001	< 0.001	< 0.001	< 0.003	0.0078	< 0.001	< 0.0005	< 0.0005	< 0.0005
MW-14 03/28		0.001	< 0.001	< 0.001	< 0.001	0.0064	< 0.0005	< 0.00049	< 0.00049	< 0.00049
MW-14 09/18		0.001	< 0.001	< 0.001	< 0.003	0.000091	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-14 03/27	27/19 <	0.001	< 0.001	< 0.001	< 0.003	0.00062	< 0.001	< 0.00045	< 0.00045	< 0.00045
	E ME	0.001	10.001	10.001	4.0.000	10001	10.001	10.00045		
MW-15 09/15		0.001	< 0.001	< 0.001	< 0.003	< 0.001	< 0.001	< 0.00045		
MW-15 03/17		0.001	< 0.001	< 0.001	< 0.003	< 0.000030	< 0.001	< 0.00045	< 0.00045	< 0.00045
MW-15 09/21 MW-15 04/05		0.001	< 0.001	< 0.001	< 0.003	< 0.000030	0.0012	< 0.00053	< 0.00053	< 0.00053
		0.001	< 0.001	< 0.001	< 0.003		< 0.001	< 0.0005		
MW-15 10/18		0.001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.001	< 0.00091		
MW-15 03/27		0.0001	< 0.001	< 0.001	< 0.003	< 0.00003	< 0.0005	< 0.00045	< 0.00045	< 0.00045
MW-15 09/18 MW-15 03/27		0.001 0.001	< 0.001 < 0.001	< 0.001 < 0.001	< 0.003 < 0.003	< 0.00003 < 0.000031	< 0.001 < 0.001	< 0.00045 < 0.00045	< 0.00045 < 0.00045	< 0.00045 < 0.00045
MW-15 03/27	7/10	0.001	< 0.00 I	< 0.001	< 0.003	< 0.000031	< 0.001	< 0.00045	<ul><li>&lt; 0.00045</li></ul>	< 0.00045

#### Historical Groundwater Analytical Data Albuquerque Products Terminal 6356 Desert Road Albuquerque, New Mexico

Well ID NMWQCC G	Sample Date W Standards	Benzene (mg/L) 0.01	Toluene (mg/L) 0.75	Ethylbenzene (mg/L) 0.75	Total Xylenes (mg/L) 0.75	1,2-EDB (mg/L) 0.0001	1,2-EDC (mg/L) 0.01	Naphthalene (mg/L) 0.03	1- Methylnaphthalene (mg/L) 0.03	2- Methylnaphthalene (mg/L) 0.03
MW-16 MW-16	09/19/18 03/27/19	< 0.001 < 0.001	< 0.001 < 0.001	< 0.001 < 0.001	< 0.003 < 0.003	< 0.00003 < 0.000030	0.163 0.137	< 0.00045 < 0.00045	< 0.00045 < 0.00045	< 0.00045 < 0.00045
IW-1	08/12/15	0.0001J	< 0.001	< 0.001	< 0.003	< 0.001	0.00095J	0.000054J	< 0.00045	< 0.00045
IW-2	08/12/15	0.0376	0.0644	0.748	0.711	< 0.001	0.0446	0.0168	0.0041	0.008
MW-20	03/18/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.00003	0.0126	< 0.00045	< 0.00045	< 0.00045
MW-20	12/14/16	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000017	0.0126			
MW-20	04/06/17	< 0.001	< 0.001	< 0.001	< 0.003		0.0086	< 0.0005		
MW-20	07/27/17	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000017	0.010			
MW-20	10/18/17	< 0.001	< 0.001	< 0.001	< 0.003	<0.00003	0.0167	<0.00091		
MW-20	12/06/17	< 0.001	< 0.001	< 0.001	< 0.003	< 0.000017	0.0074			
MW-20	03/27/18	NS	NS	NS	NS	NS	NS	NS	NS	NS

Notes:

NMWQCC = New Mexico Water Quality Control Commission

EDB = 1,2-Dibromoethane

EDC = 1,2-Dichloroethane

mg/L = milligrams per liter

MW-9\* = field duplicate NS = not sampled

'-- = not analyzed

LNAPL = light non-aqueous phase liquid

< 0.001 = Analyte was not detected above the reported detection limit.

Bold = Detected analyte concentration exceeds NMWQCC Standard for Ground Water.

# Appendices

GHD | Stage I Abatement Plan Albuquerque Products Terminal | 075015 (27)

Appendix A Environmental Data Resources GeoCheck Report

#### 075015-23RM00 - Albuquerque, NM

6356 Desert Road Albuquerque, NM 87105

Inquiry Number: 5672600.5s June 04, 2019

# The EDR GeoCheck® Report



6 Armstrong Road, 4th floor Shelton, CT 06484 Toll Free: 800.352.0050 www.edrnet.com

FORM-NULL-GON

## TABLE OF CONTENTS

#### SECTION

#### PAGE

#### **GEOCHECK ADDENDUM**

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting Source Map	A-14
Physical Setting Source Map Findings	A-15
Physical Setting Source Records Searched	PSGR-1

*Thank you for your business.* Please contact EDR at 1-800-352-0050 with any questions or comments.

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### **GEOCHECK<sup>®</sup> - PHYSICAL SETTING SOURCE REPORT**

#### TARGET PROPERTY ADDRESS

075015-23RM00 - ALBUQUERQUE, NM 6356 DESERT ROAD ALBUQUERQUE, NM 87105

#### TARGET PROPERTY COORDINATES

Latitude (North):	34.992254 - 34° 59' 32.11"
Longitude (West):	106.659747 - 106° 39' 35.09''
Universal Tranverse Mercator:	Zone 13
UTM X (Meters):	348520.2
UTM Y (Meters):	3873245.0
Elevation:	4991 ft. above sea level

#### USGS TOPOGRAPHIC MAP

Target Property Map:	34106-H6 ISLETA, NM
Version Date:	1995
North Map:	35106-A6 ALBUQUERQUE WEST, NM
Version Date:	1990

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

- 1. Groundwater flow direction, and
- 2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

#### **GEOCHECK<sup>®</sup> - PHYSICAL SETTING SOURCE SUMMARY**

#### **GROUNDWATER FLOW DIRECTION INFORMATION**

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

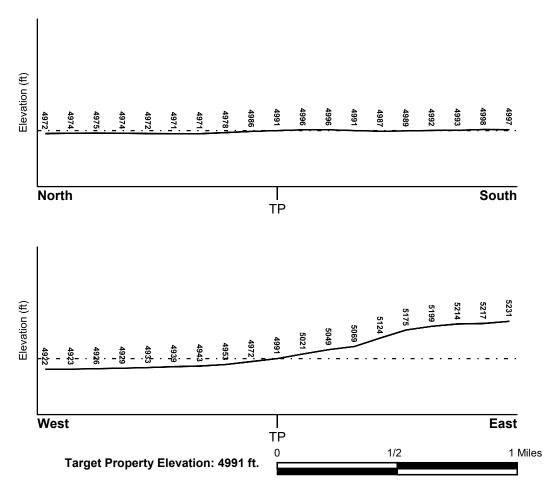
#### **TOPOGRAPHIC INFORMATION**

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

#### TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WNW

#### SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

### HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

### FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
35001C0531H	FEMA FIRM Flood data
Additional Panels in search area:	FEMA Source Type
35001C0343H 35001C0344G 35001C0535G	FEMA FIRM Flood data FEMA FIRM Flood data FEMA FIRM Flood data
NATIONAL WETLAND INVENTORY	
NWI Quad at Target Property ISLETA	NWI Electronic <u>Data Coverage</u> YES - refer to the Overview Map and Detail Map

### HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:		
Search Radius:	1.25 miles	
Status:	Not found	

### **AQUIFLOW**®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID Not Reported LOCATION FROM TP GENERAL DIRECTION GROUNDWATER FLOW

### **GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

### **GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

### **ROCK STRATIGRAPHIC UNIT**

### **GEOLOGIC AGE IDENTIFICATION**

Era:	Cenozoic	Category:	Continental Deposits
System:	Tertiary		
Series:	Pliocene		
Code:	Tpc (decoded above as Era, System & S	Series)	

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

### DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps. The following information is based on Soil Conservation Service STATSGO data.

Soil Component Name:	GILA		
Soil Surface Texture:	loam		
Hydrologic Group:	Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.		
Soil Drainage Class:	Well drained. Soils have intermediate water holding capacity. Depth to water table is more than 6 feet.		
Hydric Status: Soil does not meet the requirements for a hydric soil.			
Corrosion Potential - Uncoated Steel: HIGH			

Depth to Bedrock Min:	> 60 inches
-----------------------	-------------

Depth to Bedrock Max: > 60 inches

	Soil Layer Information						
	Βοι	indary		Classi	fication		
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil	Permeability Rate (in/hr)	Soil Reaction (pH)
1	0 inches	6 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 8.40 Min: 7.90
2	6 inches	66 inches	stratified	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 2.00 Min: 0.60	Max: 8.40 Min: 7.90

### OTHER SOIL TYPES IN AREA

Based on Soil Conservation Service STATSGO data, the following additional subordinant soil types may appear within the general area of target property.

Soil Surface Textures:	clay loam loamy fine sand sandy clay loam loamy sand
Surficial Soil Types:	clay loam loamy fine sand sandy clay loam loamy sand
Shallow Soil Types:	loamy sand
Deeper Soil Types:	loamy sand fine sand loamy fine sand sand

### LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

### WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	1.000
State Database	1.000

### FEDERAL USGS WELL INFORMATION

		LOCATION
MAP ID	WELL ID	FROM TP
No Wells Found		

### FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
N90	NM3595501	1/4 - 1/2 Mile North
AG215	NM3520001	1/2 - 1 Mile NNW
280	NM3550001	1/2 - 1 Mile NNW

Note: PWS System location is not always the same as well location.

MAP ID	WELL ID	LOCATION FROM TP
A1	NM5000000153973	0 - 1/8 Mile ESE
A2	NM500000153976	0 - 1/8 Mile ESE
A3	NM500000196466	0 - 1/8 Mile ESE
A4	NM500000064608	0 - 1/8 Mile ESE
A5	NM500000153975	0 - 1/8 Mile ESE
A6	NM500000196467	0 - 1/8 Mile ESE
A7	NM500000026066	0 - 1/8 Mile WSW
A8	NM500000064609	0 - 1/8 Mile ESE
A9	NM500000194765	0 - 1/8 Mile South
A10	NM500000061141	0 - 1/8 Mile ESE
B11	NM500000194766	0 - 1/8 Mile SSE
A12	NM500000061150	0 - 1/8 Mile ESE
B13	NM500000139787	0 - 1/8 Mile ESE
C14	NM500000143376	0 - 1/8 Mile East
B15	NM500000061140	0 - 1/8 Mile ESE
B16	NM500000061145	0 - 1/8 Mile ESE
B17	NM500000061144	0 - 1/8 Mile SE
B18	NM500000061149	0 - 1/8 Mile SE
C19	NM500000061147	0 - 1/8 Mile ESE
B20	NM500000194764	1/8 - 1/4 Mile SSE
B21	NM500000194763	1/8 - 1/4 Mile SSE
D22	NM500000017643	1/8 - 1/4 Mile SSW
D23	NM500000011831	1/8 - 1/4 Mile SSW

MAP ID	WELL ID	LOCATION FROM TP
E24	NM500000000654	1/8 - 1/4 Mile NE
E25	NM500000012455	1/8 - 1/4 Mile NE
E26	NM500000022413	1/8 - 1/4 Mile NE
F27	NM5000000143460	1/8 - 1/4 Mile SSE
F28	NM5000000143461	1/8 - 1/4 Mile SSE
G29	NM500000164963	1/8 - 1/4 Mile NNW
D30	NM5000000221136	1/8 - 1/4 Mile SSW
G31	NM5000000171766	1/8 - 1/4 Mile NNW
G32	NM5000000171767	1/8 - 1/4 Mile NNW
G33	NM500000196410	1/8 - 1/4 Mile NNW
G34	NM500000164960	1/8 - 1/4 Mile NNW
G35	NM500000196411	1/8 - 1/4 Mile NNW
G36	NM500000164958	1/8 - 1/4 Mile NNW
G37	NM500000194774	1/8 - 1/4 Mile NNW
G38	NM500000160812	1/8 - 1/4 Mile NNW
G39	NM5000000171768	1/8 - 1/4 Mile NNW
G40	NM5000000194780	1/8 - 1/4 Mile NNW
G41	NM500000194775	1/8 - 1/4 Mile NNW
G42	NM5000000196413	1/8 - 1/4 Mile NNW
G43	NM500000198728	1/8 - 1/4 Mile NNW
G44	NM500000196414	1/8 - 1/4 Mile NNW
G45	NM5000000194781	1/8 - 1/4 Mile NNW
G46	NM500000164961	1/8 - 1/4 Mile NNW
G47	NM5000000164959	1/8 - 1/4 Mile NNW
G48	NM5000000194776	1/8 - 1/4 Mile NNW
G49	NM5000000172568	1/8 - 1/4 Mile NNW
G50	NM5000000172566	1/8 - 1/4 Mile NNW
G51	NM5000000194782	1/8 - 1/4 Mile NNW
G52	NM5000000164962	1/8 - 1/4 Mile NNW
H53	NM5000000196412	1/8 - 1/4 Mile NW
G54 G55	NM5000000194777	1/8 - 1/4 Mile NNW
	NM5000000172567	1/8 - 1/4 Mile NNW 1/8 - 1/4 Mile NNW
G56	NM5000000196415	1/8 - 1/4 Mile NNW
G57 I58	NM5000000194783 NM5000000164964	1/4 - 1/2 Mile North
G59	NM5000000194778	1/4 - 1/2 Mile NORT
G60	NM5000000160811	1/4 - 1/2 Mile NNW
G61	NM5000000160813	1/4 - 1/2 Mile NNW
G62	NM5000000194779	1/4 - 1/2 Mile NNW
63	NM5000000220968	1/4 - 1/2 Mile WSW
l64	NM5000000169065	1/4 - 1/2 Mile W3W
G65	NM5000000171771	1/4 - 1/2 Mile NOW
J66	NM5000000190892	1/4 - 1/2 Mile ENE
67	NM5000000033067	1/4 - 1/2 Mile NW
K68	NM5000000007184	1/4 - 1/2 Mile ESE
L69	NM5000000019532	1/4 - 1/2 Mile USE
L00	NM5000000023097	1/4 - 1/2 Mile West
L70 L71	NM5000000132048	1/4 - 1/2 Mile West
K72	NM5000000104327	1/4 - 1/2 Mile ESE
H73	NM5000000151074	1/4 - 1/2 Mile LOL
H74	NM5000000151075	1/4 - 1/2 Mile NW
L75	NM5000000153256	1/4 - 1/2 Mile West
2.0		

MAP ID	WELL ID	LOCATION FROM TP
M76	NM500000017012	1/4 - 1/2 Mile NNW
M77	NM500000143378	1/4 - 1/2 Mile NNW
178	NM500000198725	1/4 - 1/2 Mile North
79	NM500000025562	1/4 - 1/2 Mile South
M80	NM500000099319	1/4 - 1/2 Mile NNW
M81	NM500000099317	1/4 - 1/2 Mile NNW
N82	NM500000198726	1/4 - 1/2 Mile North
M83	NM500000099320	1/4 - 1/2 Mile NNW
M84	NM500000060120	1/4 - 1/2 Mile NNW
N85	NM500000198727	1/4 - 1/2 Mile North
M86	NM500000060122	1/4 - 1/2 Mile NNW
M87	NM500000099321	1/4 - 1/2 Mile NNW
M88	NM500000060121	1/4 - 1/2 Mile NNW
M89	NM500000099318	1/4 - 1/2 Mile NNW
N91	NM500000209591	1/4 - 1/2 Mile North
J92	NM500000153294	1/4 - 1/2 Mile ENE
O93	NM500000087386	1/4 - 1/2 Mile ENE
094	NM500000105812	1/4 - 1/2 Mile ENE
P95	NM500000012098	1/4 - 1/2 Mile West
P96	NM500000012080	1/4 - 1/2 Mile West
P97	NM500000012284	1/4 - 1/2 Mile West
P98	NM500000012661	1/4 - 1/2 Mile West
P99	NM500000012623	1/4 - 1/2 Mile West
P100	NM500000010588	1/4 - 1/2 Mile West
P101	NM500000010062	1/4 - 1/2 Mile West
P102	NM500000010627	1/4 - 1/2 Mile West
P103	NM500000011832	1/4 - 1/2 Mile West
P104	NM500000011487	1/4 - 1/2 Mile West 1/4 - 1/2 Mile West
P105 P106	NM500000016655 NM500000016109	1/4 - 1/2 Mile West
P100 P107	NM500000017666	1/4 - 1/2 Mile West
P107 P108	NM500000017917	1/4 - 1/2 Mile West
P109	NM500000017744	1/4 - 1/2 Mile West
P110	NM500000013378	1/4 - 1/2 Mile West
P111	NM500000013345	1/4 - 1/2 Mile West
P112	NM500000013650	1/4 - 1/2 Mile West
P113	NM500000015418	1/4 - 1/2 Mile West
P114	NM500000014657	1/4 - 1/2 Mile West
P115	NM500000003977	1/4 - 1/2 Mile West
P116	NM500000003706	1/4 - 1/2 Mile West
P117	NM500000005711	1/4 - 1/2 Mile West
P118	NM500000006838	1/4 - 1/2 Mile West
P119	NM500000005925	1/4 - 1/2 Mile West
P120	NM500000001585	1/4 - 1/2 Mile West
P121	NM500000000462	1/4 - 1/2 Mile West
P122	NM500000001685	1/4 - 1/2 Mile West
P123	NM500000002811	1/4 - 1/2 Mile West
P124	NM500000002144	1/4 - 1/2 Mile West
P125	NM500000009229	1/4 - 1/2 Mile West
P126	NM500000008753	1/4 - 1/2 Mile West
P127	NM500000009520	1/4 - 1/2 Mile West
P128	NM500000009791	1/4 - 1/2 Mile West

MAP ID	WELL ID	LOCATION FROM TP
P129	NM5000000009524	1/4 - 1/2 Mile West
P130	NM500000007553	1/4 - 1/2 Mile West
P131	NM500000006862	1/4 - 1/2 Mile West
P132	NM500000008158	1/4 - 1/2 Mile West
P133	NM500000008458	1/4 - 1/2 Mile West
P134	NM500000008198	1/4 - 1/2 Mile West
P135	NM500000025082	1/4 - 1/2 Mile West
P136	NM500000024867	1/4 - 1/2 Mile West
P137	NM500000025731	1/4 - 1/2 Mile West
P138	NM500000026669	1/4 - 1/2 Mile West
P139	NM500000026132	1/4 - 1/2 Mile West
P140	NM500000024132	1/4 - 1/2 Mile West
P141	NM500000023808	1/4 - 1/2 Mile West
P142	NM500000024324	1/4 - 1/2 Mile West
P143	NM500000024569	1/4 - 1/2 Mile West
P144	NM500000024367	1/4 - 1/2 Mile West
P145	NM500000029795	1/4 - 1/2 Mile West
P146	NM500000029741	1/4 - 1/2 Mile West
P147	NM500000033261	1/4 - 1/2 Mile West
P148	NM500000176474	1/4 - 1/2 Mile West
P149	NM500000053408	1/4 - 1/2 Mile West
P150	NM500000027346	1/4 - 1/2 Mile West
P151	NM500000026990	1/4 - 1/2 Mile West
P152	NM500000027623	1/4 - 1/2 Mile West
P153	NM500000029633	1/4 - 1/2 Mile West
P154	NM500000029326	1/4 - 1/2 Mile West
P155	NM500000018588	1/4 - 1/2 Mile West
P156	NM500000018579	1/4 - 1/2 Mile West
P157	NM500000018941	1/4 - 1/2 Mile West
P158	NM500000019215	1/4 - 1/2 Mile West
P159	NM500000019126	1/4 - 1/2 Mile West
P160	NM500000018308	1/4 - 1/2 Mile West
P161	NM500000018226	1/4 - 1/2 Mile West
P162	NM500000018327	1/4 - 1/2 Mile West
P163	NM500000018459	1/4 - 1/2 Mile West
P164	NM500000018432	1/4 - 1/2 Mile West
P165	NM500000020997	1/4 - 1/2 Mile West
P166	NM500000020966	1/4 - 1/2 Mile West
P167	NM500000022118	1/4 - 1/2 Mile West
P168	NM500000023099	1/4 - 1/2 Mile West
P169	NM500000022576	1/4 - 1/2 Mile West
P170	NM500000019502	1/4 - 1/2 Mile West
P171	NM500000019332	1/4 - 1/2 Mile West
P172	NM500000019845	1/4 - 1/2 Mile West
P173	NM500000020775	1/4 - 1/2 Mile West
P174	NM500000020088	1/4 - 1/2 Mile West
Q175	NM500000153254	1/4 - 1/2 Mile NNE
Q176	NM5000000153259	1/4 - 1/2 Mile NNE
N177	NM500000002517	1/4 - 1/2 Mile North
Q178 D170	NM500000194784	1/4 - 1/2 Mile NNE
R179	NM5000000173880	1/4 - 1/2 Mile NE
S180	NM500000153260	1/4 - 1/2 Mile NW

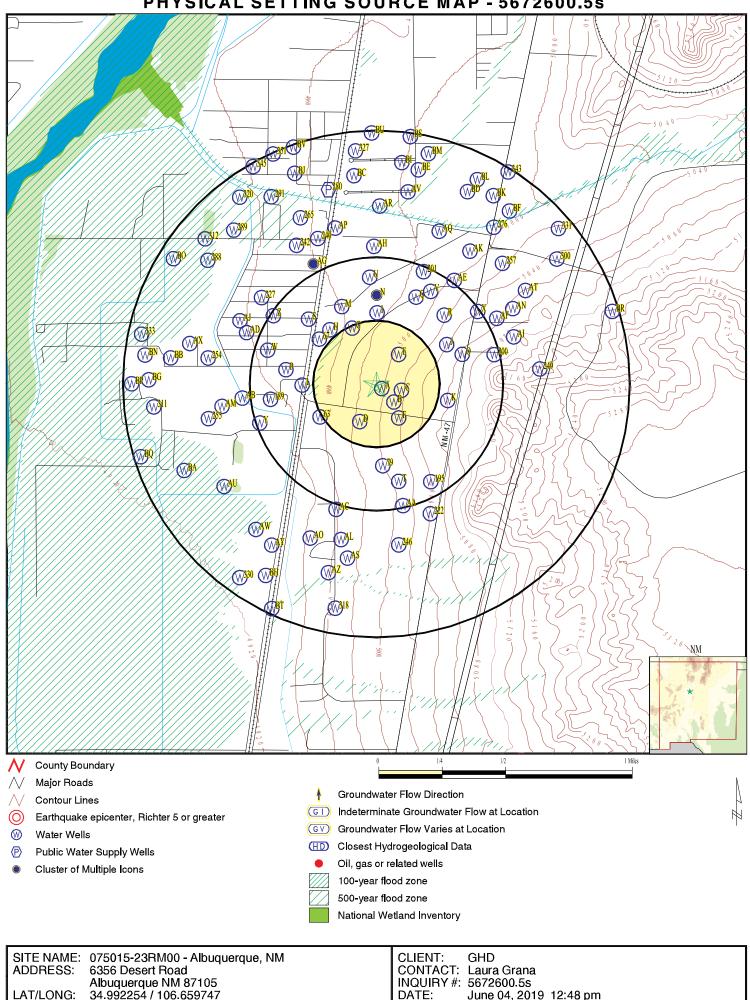
		LOCATION
MAP ID	WELL ID	FROM TP
S181	NM5000000153261	1/4 - 1/2 Mile NW
R182	NM500000167555	1/4 - 1/2 Mile NE
N183	NM5000000194785	1/4 - 1/2 Mile North
T184	NM5000000020612	1/4 - 1/2 Mile SSE
T185	NM5000000021482	1/4 - 1/2 Mile SSE
R186	NM5000000055651	1/4 - 1/2 Mile OOL
Q187	NM5000000194786	1/4 - 1/2 Mile NE
U188	NM5000000157707	1/4 - 1/2 Mile North
189	NM5000000138446	1/4 - 1/2 Mile West
V190	NM500000093897	1/4 - 1/2 Mile West
V190 V191	NM5000000219255	1/4 - 1/2 Mile NNE
U192	NM5000000173442	1/4 - 1/2 Mile NNE
		1/4 - 1/2 Mile North
W193	NM500000100638	
X194	NM500000130360	1/4 - 1/2 Mile ENE
195	NM5000000107624	1/4 - 1/2 Mile SSE
Y196	NM500000033678	1/4 - 1/2 Mile WSW 1/4 - 1/2 Mile WNW
W197	NM500000015957	
Z198	NM5000000153257	1/4 - 1/2 Mile WNW
AA199	NM500000005376	1/4 - 1/2 Mile South
200	NM500000000240	1/4 - 1/2 Mile ENE
201	NM500000018267	1/4 - 1/2 Mile NNE
Z202	NM5000000171187	1/2 - 1 Mile NW
X203	NM500000009403	1/2 - 1 Mile NE
X204	NM500000023088	1/2 - 1 Mile NE
X205	NM500000025693	1/2 - 1 Mile NE
AB206	NM500000163933	1/2 - 1 Mile West 1/2 - 1 Mile SSW
AC207	NM500000027756	
AA208 AD209	NM5000000131005 NM5000000014906	1/2 - 1 Mile SSE 1/2 - 1 Mile WNW
AE210	NM500000014308	1/2 - 1 Mile NNE
Y211	NM5000000143371 NM5000000011145	1/2 - 1 Mile WSW
X212	NM500000007914	1/2 - 1 Mile WSW
AE213	NM5000000188422	1/2 - 1 Mile NE
AE213 AF214	NM5000000213668	1/2 - 1 Mile INE
AH214 AH216	NM5000000197422	1/2 - 1 Mile North
AF217	NM500000007824	1/2 - 1 Mile ENE
AG218	NM5000000020060	1/2 - 1 Mile NNW
AC219	NM5000000014389	1/2 - 1 Mile SSW
AF220	NM5000000213672	1/2 - 1 Mile SSW
AH220 AH221	NM5000000014631	1/2 - 1 Mile North
222	NM5000000024381	1/2 - 1 Mile SSE
AI223	NM5000000143372	1/2 - 1 Mile SSE
AB224	NM5000000215194	1/2 - 1 Mile West
AF225	NM5000000011486	1/2 - 1 Mile ENE
AD226	NM5000000001275	1/2 - 1 Mile WNW
227	NM5000000171274	1/2 - 1 Mile NW
AD228	NM5000000173046	1/2 - 1 Mile WNW
AJ220 AJ229	NM5000000003986	1/2 - 1 Mile WNW
AJ229 AJ230	NM5000000011638	1/2 - 1 Mile WNW
AJ230 AI231	NM5000000133908	1/2 - 1 Mile ENE
AJ232	NM500000007789	1/2 - 1 Mile WNW
AK233	NM5000000016630	1/2 - 1 Mile NE

		LOCATION
MAP ID	WELL ID	FROM TP
AJ234	NM5000000170474	1/2 - 1 Mile WNW
AJ234 AL235	NM5000000005538	1/2 - 1 Mile South
AM236	NM5000000143396	1/2 - 1 Mile West
AN237	NM5000000123899	1/2 - 1 Mile ENE
AN238	NM5000000000123	1/2 - 1 Mile ENE
AM239	NM5000000024583	1/2 - 1 Mile West
240	NM5000000153258	1/2 - 1 Mile NNW
AO241	NM500000105828	1/2 - 1 Mile SSW
242	NM500000033424	1/2 - 1 Mile NNW
AL243	NM5000000103702	1/2 - 1 Mile SSW
AP244	NM500000000453	1/2 - 1 Mile NNW
AP245	NM500000026933	1/2 - 1 Mile NNW
246	NM5000000110545	1/2 - 1 Mile South
AL247	NM500000022273	1/2 - 1 Mile SSW
AK248	NM5000000165716	1/2 - 1 Mile NE
249	NM500000002599	1/2 - 1 Mile East
AQ250	NM500000093267	1/2 - 1 Mile NNE
AQ251	NM500000006304	1/2 - 1 Mile NNE
AK252	NM500000219256	1/2 - 1 Mile NE
AK253	NM500000166234	1/2 - 1 Mile NE
254	NM5000000146892	1/2 - 1 Mile West
255	NM500000033320	1/2 - 1 Mile WSW
AR256	NM500000013415	1/2 - 1 Mile North
257	NM5000000181802	1/2 - 1 Mile NE
AS258	NM500000029239	1/2 - 1 Mile South
AT259	NM5000000053177 NM5000000050819	1/2 - 1 Mile ENE 1/2 - 1 Mile ENE
AT260 AT261	NM5000000053189	1/2 - 1 Mile ENE
A0262	NM5000000169346	1/2 - 1 Mile SSW
AS263	NM500000029307	1/2 - 1 Mile South
AU264	NM5000000202893	1/2 - 1 Mile WSW
265	NM5000000110509	1/2 - 1 Mile NNW
AR266	NM5000000148597	1/2 - 1 Mile North
AU267	NM5000000202892	1/2 - 1 Mile SW
AV268	NM5000000001416	1/2 - 1 Mile North
AW269	NM500000021822	1/2 - 1 Mile SW
AW270	NM500000128577	1/2 - 1 Mile SW
AX271	NM500000086628	1/2 - 1 Mile WNW
AY272	NM500000000060	1/2 - 1 Mile SSW
AY273	NM500000001371	1/2 - 1 Mile SSW
AZ274	NM5000000165806	1/2 - 1 Mile SSW
AX275	NM500000033367	1/2 - 1 Mile West
276	NM500000023407	1/2 - 1 Mile NE
AZ277	NM500000036446	1/2 - 1 Mile SSW
AV278	NM5000000161262	1/2 - 1 Mile NNE
AV279	NM500000190689	1/2 - 1 Mile North
BA281	NM500000008411	1/2 - 1 Mile WSW
BB282	NM500000069347	1/2 - 1 Mile West
BB283	NM5000000176187	1/2 - 1 Mile West
BC284	NM500000023167	1/2 - 1 Mile North
BC285	NM500000033035	1/2 - 1 Mile North
BD286	NM500000022624	1/2 - 1 Mile NNE

		LOCATION
MAP ID	WELL ID	FROM TP
BC287	NM5000000066243	1/2 - 1 Mile North
288	NM5000000014687	1/2 - 1 Mile NW
289	NM5000000176851	1/2 - 1 Mile NW
BE290	NM5000000203974	1/2 - 1 Mile North
291	NM5000000000112	1/2 - 1 Mile NNW
BE292	NM500000203973	1/2 - 1 Mile NNE
BE293	NM500000203975	1/2 - 1 Mile North
BF294	NM500000000601	1/2 - 1 Mile NE
BF295	NM500000012658	1/2 - 1 Mile NE
BB296	NM500000033995	1/2 - 1 Mile West
BE297	NM500000099312	1/2 - 1 Mile North
BG298	NM5000000172027	1/2 - 1 Mile West
BD299	NM500000060140	1/2 - 1 Mile NNE
300	NM500000007842	1/2 - 1 Mile NE
BG301	NM500000048591	1/2 - 1 Mile West
BH302	NM500000033837	1/2 - 1 Mile SSW
BA303	NM500000186533	1/2 - 1 Mile WSW
BC304	NM5000000182792	1/2 - 1 Mile North
BI305	NM500000012617	1/2 - 1 Mile North
BJ306	NM500000161965	1/2 - 1 Mile NNW
BK307 BK308	NM500000000760	1/2 - 1 Mile NNE
BK308 BE309	NM5000000144048 NM5000000153255	1/2 - 1 Mile NNE 1/2 - 1 Mile North
BH310	NM5000000131039	1/2 - 1 Mile North
311	NM5000000176697	1/2 - 1 Mile West
312	NM5000000132222	1/2 - 1 Mile NW
BI313	NM5000000217490	1/2 - 1 Mile North
BE314	NM500000022207	1/2 - 1 Mile NNE
BL315	NM500000013390	1/2 - 1 Mile NNE
BL316	NM500000019612	1/2 - 1 Mile NNE
BL317	NM500000033605	1/2 - 1 Mile NNE
318	NM500000093010	1/2 - 1 Mile South
BJ319	NM500000009609	1/2 - 1 Mile NNW
320	NM5000000100496	1/2 - 1 Mile NW
BG321	NM5000000172026	1/2 - 1 Mile West
BG322	NM5000000172029	1/2 - 1 Mile West
BM323	NM500000206983	1/2 - 1 Mile NNE
BN324	NM500000163493	1/2 - 1 Mile West
BN325	NM500000163494	1/2 - 1 Mile West
BN326	NM5000000186714	1/2 - 1 Mile West
327	NM5000000163501	1/2 - 1 Mile North
BO328	NM500000009451	1/2 - 1 Mile WNW
BG329	NM5000000172025	1/2 - 1 Mile West 1/2 - 1 Mile SW
330 331	NM500000024692 NM5000000153290	1/2 - 1 Mile SV
BM332	NM500000029890	1/2 - 1 Mile NE
333	NM500000029890 NM5000000163496	1/2 - 1 Mile NNE 1/2 - 1 Mile WNW
BP334	NM5000000135282	1/2 - 1 Mile Wisk
BO335	NM5000000006441	1/2 - 1 Mile West
BP336	NM5000000190537	1/2 - 1 Mile West
BQ337	NM500000006484	1/2 - 1 Mile WSW
BR338	NM5000000191897	1/2 - 1 Mile ENE

MAP ID	WELL ID	LOCATION FROM TP
BS339	NM5000000198729	1/2 - 1 Mile North
BT340	NM500000016569	1/2 - 1 Mile SSW
BT341	NM500000061326	1/2 - 1 Mile SSW
BR342	NM500000010684	1/2 - 1 Mile ENE
343	NM500000151073	1/2 - 1 Mile NNE
BP344	NM500000130960	1/2 - 1 Mile West
345	NM500000104380	1/2 - 1 Mile NNW
BU346	NM500000203977	1/2 - 1 Mile North
BQ347	NM500000199677	1/2 - 1 Mile WSW
BV348	NM500000021566	1/2 - 1 Mile NNW
BU349	NM500000015650	1/2 - 1 Mile North
BV350	NM500000001564	1/2 - 1 Mile NNW
351	NM500000149335	1/2 - 1 Mile NNW
BS352	NM500000205019	1/2 - 1 Mile North
BU353	NM500000203976	1/2 - 1 Mile North
BS354	NM500000205020	1/2 - 1 Mile North

## **PHYSICAL SETTING SOURCE MAP - 5672600.5s**



DATE:	June 04, 2019  12:48 pm	
	Convright @ 2019 EDB Inc. @ 2015 TomTom Bel. 201	5

Map ID Direction Distance Elevation

#### A1 ESE 0 - 1/8 Mile

### Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### A2 ESE 0 - 1/8 Mile Higher

# Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### A3 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 52273 Not Reported 2011-11-18T00:00:00.000Z Not Reported 97 100

Not Reported 52273 Not Reported 2010-04-23T00:00:00.000Z Not Reported 103 100 2010-05-13T00:00:00.000Z Not Reported Not Reported Not Reported Active Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported

MON

l 52273

0

100

Not Reported

MON

#### Database EDR

EDR ID Number

NM WELLS NM500000153973

POD Basin: POD Suffix: Drilling Started:	Rio Grande POD2 2010-04-23T00:00:00.000Z
Plug Date:	Not Reported
Elevation:	Not Reported
Groundwater Source:	Shallow
Depth to Water:	87
Well Schedule Date:	Not Reported
Pump Type:	Not Reported
Discharge Pipe Size:	Not Reported
Max Diversion Allowed:	Not Reported
Est Yield (Gal/Min):	0
Casing Size:	2
Well Tag:	Not Reported
Water Right Status:	Permit
Diversion Amt Allowed:	15

#### NM WELLS NM500000153976

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD4 Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported 0 0 Not Reported Permit 15

## NM WELLS NM500000196466

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD5 2011-11-17T00:00:00.000Z Not Reported Not Reported Shallow 87

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### A4 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2012-11-15T00:00:00.000Z Not Reported Not Reported Not Reported Active Not Reported Not Reported Not Reported MON

Not Reported 52273

Not Reported

Active

MON

97

100

2011-11-21T00:00:00.000Z

2012-11-15T00:00:00.000Z

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported O Not Reported Permit 15

### NM WELLS NM500000064608

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD6 2011-11-21T00:00:00.000Z Not Reported Not Reported Shallow 92 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 15

#### A5 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 52273 Not Reported 2010-04-23T00:00:00.000Z Not Reported 98 100 2010-05-13T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Not Reported Not Reported MON

### NM WELLS NM500000153975

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD3 2010-04-23T00:00:00.000Z Not Reported Not Reported Shallow 87 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 15

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Map ID Direction Distance Elevation

#### A6 ESE 0 - 1/8 Mile

### Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- A7 WSW 0 - 1/8 Mile Lower

### Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:

Pod Subbasin:

Water Right Use:

Static Level:

Not Reported 52273 Not Reported 1990-06-08T00:00:00.000Z Not Reported 410 100 1990-06-28T00:00:00.000Z COMMERCIAL-EXPL Not Reported Not Reported Not Reported Active Not Reported Not Reported MON

Not Reported 52273 Not Reported 2011-12-27T00:00:00.000Z Not Reported 99 100 2012-11-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Not Reported Not Reported MON

### Database EDR ID Number

NM WELLS NM500000196467

**Rio Grande** POD7 2011-12-27T00:00:00.000Z Not Reported Not Reported Shallow 88 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 15

#### NM WELLS NM500000026066

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1990-05-21T00:00:00.000Z Not Reported Not Reported Shallow 82 Not Reported Not Reported Not Reported 15 0 8.63 Not Reported Permit 15

#### A8 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

#### Not Reported 52273 Not Reported Not Reported Not Reported 0 0

### NM WELLS NM500000064609

.....

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD8 Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### A9 South 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

### Not Reported Not Reported Not Reported Not Reported Pending Not Reported Not Reported MON

Not Reported

Middle Rio Grande

Pending

MON

52273

0

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 15

### NM WELLS NM500000194765

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD11 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 15

#### A10 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-08-24T00:00:00.000Z Not Reported 108 100 2009-09-15T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000061141

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD81 2009-08-24T00:00:00.000Z Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

		Database	EDR ID Number
		NM WELLS	NM500000194766
Not Reported 52273 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:	POD Not F Not F Not F 0 Not F Not F Not F 0 0 Not F	Reported Reported Reported Reported Reported Reported Reported Reported
		NM WELLS	NM500000061150
Not Reported 51334 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	POD Not F Not F Not F Not F 0 Not F	Reported Reported Reported Reported Reported Reported
	52273 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON NOT Reported MON	52273POD Suffix:Not ReportedDrilling Started:Not ReportedPlug Date:Not ReportedElevation:0Groundwater Source:0Depth to Water:Not ReportedWell Schedule Date:Not ReportedPump Type:Not ReportedDischarge Pipe Size:Not ReportedMax Diversion Allowed:Not ReportedEst Yield (Gal/Min):PendingCasing Size:Middle Rio GrandeWell Tag:Not ReportedWater Right Status:MONDiversion Ant Allowed:MONDiversion Ant Allowed:Not ReportedPoD Basin:51334POD Suffix:Not ReportedPlug Date:Not ReportedPump Type:Not ReportedPump Type:Not ReportedPump Type:	Not Reported         POD Basin:         Rio G           52273         POD Suffix:         POD           Not Reported         Drilling Started:         Not F           Not Reported         Plug Date:         Not F           Not Reported         Elevation:         Not F           0         Groundwater Source:         Not F           0         Depth to Water:         0           Not Reported         Pump Type:         Not F           Not Reported         Discharge Pipe Size:         Not F           Not Reported         Max Diversion Allowed:         Not F           Not Reported         Est Yield (Gal/Min):         0           Pending         Casing Size:         0           Middle Rio Grande         Well Tag:         Not F           Not Reported         Water Right Status:         Perm           MON         Diversion Amt Allowed:         15           Not Reported         Drilling Started:         Not F           Not Reported         Plug Date:         Not F

#### B13 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Surface Water Diversion:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

Not Reported 88557 Not Reported 2007-07-13T00:00:00.000Z Not Reported 109 100

Not Reported

Not Reported

Middle Rio Grande

Pending

MON

### POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Est Yield (Gal/Min):

Water Right Status:

Diversion Amt Allowed:

Casing Size:

Well Tag:

Rio Grande POD2 2007-07-11T00:00:00.000Z Not Reported Not Reported Shallow 106

NM500000139787

0

0

0

NM WELLS

Permit

Not Reported

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### C14 East 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2008-03-18T00:00:00.000Z MONITOR Not Reported Not Reported Active Middle Rio Grande Not Reported POL

Not Reported

Not Reported

SUBDIVISION

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

SUB

1958-09-10T00:00:00.000Z

1959-03-24T00:00:00.000Z

1958-09-18T00:00:00.000Z

00541

186

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

### NM WELLS NM500000143376

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande X 1958-07-10T00:00:00.000Z Not Reported Shallow 126 Not Reported SUBMER 4.25 Not Reported 45 6 Not Reported Permit

#### B15 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-08-18T00:00:00.000Z Not Reported 109 100 2009-09-15T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000061140

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande POD80** 2009-08-18T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

#### B16 ESE 0 - 1/8 Mile

- Higher Well Name:
  - POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- B17 SE 0 - 1/8 Mile Higher
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2009-08-17T00:00:00.000Z Not Reported 108 100 2009-09-15T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported Not Reported Not Reported 2009-09-15T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

51334

109

100

Database EDR ID Number

NM WELLS NM500000061145

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande POD83** 2009-09-15T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### NM WELLS NM500000061144

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD82 2009-08-17T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### B18 SE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 51334 Not Reported 2009-09-01T00:00:00.000Z Not Reported 115 100

#### NM WELLS NM500000061149

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD85 2009-08-31T00:00:00.000Z Not Reported Not Reported Shallow 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### C19 ESE 0 - 1/8 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2009-09-15T00:00:00.000Z MON Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported Not Reported

Not Reported

Middle Rio Grande

2009-08-26T00:00:00.000Z

2009-09-15T00:00:00.000Z

51334

115

100

MON

Active

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

### NM WELLS NM500000061147

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD84 2009-08-25T00:00:00.000Z Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit

#### B20 SSE 1/8 - 1/4 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 52273 Not Reported Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

#### NM WELLS NM500000194764

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD10 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 15

Map ID Direction Distance Elevation

Elevation			Database	EDR ID Number
B21 SSE 1/8 - 1/4 Mile Higher			NM WELLS	NM500000194763
Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:	Not Reported 52273 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:	POD Not F Not F Not F 0 Not F Not F Not F 0 0	Reported Reported Reported Reported Reported Reported Reported Reported
D22 SSW 1/8 - 1/4 Mile Lower			NM WELLS	 NM500000017643
Well Name: POD #:	Not Reported 00541 Not Reported	POD Basin: POD Suffix: Drilling Started:	X2	

- Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- 00541 Not Reported 1958-06-14T00:00:00.000Z Not Reported 160 100 1958-07-01T00:00:00.000Z DOM & SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Rio Grande X2 1958-06-09T00:00:00.000Z Not Reported Not Reported Shallow 85 Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

#### D23 SSW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 40084 Not Reported 1983-07-13T00:00:00.000Z Not Reported 112 100

### NM WELLS NM500000011831

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1983-07-13T00:00:00.000Z Not Reported Not Reported Shallow 9

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### E24 NE 1/8 - 1/4 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### E25 NE 1/8 - 1/4 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1983-07-28T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

POL

56113

0

100

POL

56113

0

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

### NM WELLS NM50000000654

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** S2 Not Reported Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 40.3

### NM WELLS NM500000012455

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 40.3

Map ID Direction Distance

26			Database	EDR ID Numbe
E			NM WELLS	NM50000002241
8 - 1/4 Mile				
igher				
Well Name:	Not Reported	POD Basin:	Rio (	Grande
POD #:	56113	POD Suffix:	S	
Land Grant:	Not Reported	Drilling Started:		Reported
Well Completed:	Not Reported	Plug Date:	Not F	Reported
Completion Proved:	Not Reported	Elevation:	Not F	Reported
Well Depth (ft):	0	Groundwater Source:	Shall	OW
% Shallow:	100	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:	Not F	Reported
Well Use:	Not Reported	Pump Type:		Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:		Reported
Aquifer:	Not Reported	Max Diversion Allowed:		Reported
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Not Reported	Casing Size:	0	
Pod Subbasin:	Not Reported	Well Tag:		Reported
Static Level:	Not Reported	Water Right Status:	Perm	nit
Water Right Use:	POL	Diversion Amt Allowed:	40.3	
27 SE 8 - 1/4 Mile			NM WELLS	 NM500000014346
SE 8 - 1/4 Mile			NM WELLS	NM50000014346
SE 8 - 1/4 Mile	Not Reported	POD Basin:		<b>NM500000014346</b> Grande
SE 8 - 1/4 Mile gher	Not Reported 00541	POD Basin: POD Suffix:		
SE 8 - 1/4 Mile gher Well Name: POD #: Land Grant:	00541 Not Reported	POD Suffix: Drilling Started:	Rio ( DS Not F	Grande Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed:	00541 Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date:	Rio C DS Not F Not F	Grande Reported Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved:	00541 Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation:	Rio C DS Not F Not F Not F	Grande Reported Reported Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft):	00541 Not Reported Not Reported Not Reported 0	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source:	Rio C DS Not F Not F Not F Not F	Grande Reported Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:	00541 Not Reported Not Reported Not Reported 0 0	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:	Rio C DS Not F Not F Not F Not F 0	Grande Reported Reported Reported Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:	00541 Not Reported Not Reported Not Reported 0 0 Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date:	Rio C DS Not F Not F Not F O Not F	Grande Reported Reported Reported Reported
SE 3 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use:	00541 Not Reported Not Reported 0 0 Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	Rio C DS Not F Not F Not F O Not F Not F	Grande Reported Reported Reported Reported Reported Reported
SE B - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #:	00541 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size:	Rio C DS Not F Not F Not F O Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported
SE B - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer:	00541 Not Reported Not Reported O O Not Reported Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed:	Rio C DS Not F Not F Not F O Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported
SE 8 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion:	00541 Not Reported Not Reported O O Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min):	Rio C DS Not F Not F Not F O Not F Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported
SE 8 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:	00541 Not Reported Not Reported O O Not Reported Not Reported Not Reported Not Reported Not Reported Pending	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size:	Rio C DS Not F Not F Not F O Not F Not F Not F O O	Grande Reported Reported Reported Reported Reported Reported Reported Reported
SE 8 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin:	00541 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:	Rio C DS Not F Not F Not F O Not F Not F Not F O O Not F	Reported Reported Reported Reported Reported Reported Reported Reported
SE 8 - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:	00541 Not Reported Not Reported O O Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status:	Rio C DS Not F Not F Not F Not F Not F Not F Not F O 0 Not F Licer	Grande Reported Reported Reported Reported Reported Reported Reported Reported
SE 8 - 1/4 Mile igher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin:	00541 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:	Rio C DS Not F Not F Not F O Not F Not F Not F O O Not F	Grande Reported Reported Reported Reported Reported Reported Reported Reported
SE B - 1/4 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:	00541 Not Reported Not Reported O O Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status:	Rio C DS Not F Not F Not F Not F Not F Not F Not F O 0 Not F Licer	Grande Reported Reported Reported Reported Reported Reported Reported Reported

### 1/8 - 1/4 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 00541 Not Reported 2005-03-30T00:00:00.000Z Not Reported 280 100 POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD3 2005-03-23T00:00:00.000Z Not Reported Not Reported Shallow 125

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G29 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2005-04-04T00:00:00.000Z INDUSTRIAL Not Reported Not Reported Active Middle Rio Grande Not Reported IND

Not Reported

Middle Rio Grande

2013-10-09T00:00:00.000Z

2013-11-12T00:00:00.000Z

51334

82

100

POL

Active

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 100 8 Not Reported Licensed 21

### NM WELLS NM500000164963

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD139 2013-10-08T00:00:00.000Z Not Reported Shallow 70 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit

#### D30 SSW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 96214 NON Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### NM WELLS NM500000221136

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD2 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 1

Map ID Direction Distance Elevation

#### G31 NNW

1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2013-03-16T00:00:00.000Z Not Reported 83 100 2013-06-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

#### Database EDR ID Number

NM WELLS NM500000171766

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD125 2013-03-05T00:00:00.000Z Not Reported Not Reported Shallow 52 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G32 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:

Water Right Use:

Not Reported 51334 Not Reported 2013-04-09T00:00:00.000Z Not Reported 81 100 2013-06-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000171767

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD126 2013-04-09T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G33 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 Not Reported 2013-04-22T00:00:00.000Z Not Reported 77 100

### NM WELLS NM500000196410

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD124 2013-04-21T00:00:00.000Z Not Reported Not Reported Shallow

52

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G34 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2013-06-12T00:00:00.000Z POL Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported 51334

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

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Active

MON

2013-09-28T00:00:00.000Z

2013-11-12T00:00:00.000Z

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

### NM WELLS NM500000164960

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD134 2013-09-27T00:00:00.000Z Not Reported Not Reported Shallow 57 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G35 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2013-03-29T00:00:00.000Z Not Reported 83 100 2013-06-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000196411

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD127 2013-03-29T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

Map ID Direction Distance Elevation

#### G36 NNW

1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- G37 NNW 1/8 - 1/4 Mile Lower
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- G38 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 Not Reported 2014-04-25T00:00:00.000Z Not Reported 76 100

Not Reported 51334 Not Reported 2013-10-02T00:00:00.000Z Not Reported 80 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Not Reported Active

Middle Rio Grande

Not Reported

Middle Rio Grande

Pending

MON

51334

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0

MON

Database EDR ID Number

NM WELLS NM500000164958

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD131 2013-09-30T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### NM WELLS NM500000194774

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande POD152 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported O Not Reported O Not Reported Permit O

### NM WELLS NM500000160812

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD150 2014-04-25T00:00:00.000Z Not Reported Not Reported Shallow 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G39 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2014-06-04T00:00:00.000Z MON Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

2013-03-27T00:00:00.000Z

2013-06-12T00:00:00.000Z

51334

83

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Active

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Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

### NM WELLS NM500000171768

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande POD128** 2013-03-27T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G40 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

### NM WELLS NM500000194780

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD158 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

Map ID Direction Distance Elevation

#### Database EDR ID Number G41 NNW NM WELLS NM500000194775 1/8 - 1/4 Mile Lower Well Name: Not Reported POD Basin: **Rio Grande** POD #: 51334 POD Suffix: POD153 Land Grant: Not Reported **Drilling Started:** Not Reported Well Completed: Not Reported Plug Date: Not Reported **Completion Proved:** Not Reported Elevation: Not Reported Well Depth (ft): 0 Groundwater Source: Not Reported % Shallow: 0 Depth to Water: 0 Not Reported OSE Filing Date: Not Reported Well Schedule Date: Well Use: Not Reported Pump Type: Not Reported Pump Serial #: Not Reported Discharge Pipe Size: Not Reported Not Reported Max Diversion Allowed: Not Reported Aquifer: Surface Water Diversion: Not Reported Est Yield (Gal/Min): 0 POD Status: Pending Casing Size: 0 Pod Subbasin: Middle Rio Grande Well Tag: Not Reported Static Level: Not Reported Water Right Status: Permit Water Right Use: MON **Diversion Amt Allowed:** 0 G42 NM WELLS NM500000196413

NNW 1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2013-10-02T00:00:00.000Z Not Reported 80 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD132 2013-10-01T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G43 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 Not Reported 2015-10-29T00:00:00.000Z Not Reported 80 100

### NM WELLS NM500000198728

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD168 2015-10-27T00:00:00.000Z Not Reported Not Reported Shallow 53

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G44 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2016-08-03T00:00:00.000Z POL Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

2013-10-04T00:00:00.000Z

2013-11-12T00:00:00.000Z

51334

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Active

MON

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 10 4 Not Reported Permit 0

### NM WELLS NM500000196414

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD135 2013-10-02T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit

#### G45 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

### NM WELLS NM500000194781

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD159 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

Map ID Direction Distance Elevation

#### G46 NNW

1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2013-09-28T00:00:00.000Z Not Reported 80 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

#### Database EDR ID Number

NM WELLS NM500000164961

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD136 2013-09-26T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G47 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:

Water Right Use:

Not Reported 51334 Not Reported 2013-10-04T00:00:00.000Z Not Reported 80 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000164959

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD133 2013-10-03T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### G48 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 Not Reported Not Reported Not Reported 0 0

### NM WELLS NM500000194776

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD154 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G49 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

2014-04-23T00:00:00.000Z

2014-06-04T00:00:00.000Z

51334

75

100

MON

Active

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 0

### NM WELLS NM500000172568

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande POD148** 2014-04-23T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### G50 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2014-04-21T00:00:00.000Z Not Reported 75 100 2014-06-04T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

#### NM WELLS NM500000172566

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD146 2014-04-21T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

#### Database EDR ID Number G51 NNW NM WELLS NM500000194782 1/8 - 1/4 Mile Lower Well Name: Not Reported POD Basin: **Rio Grande** POD #: 51334 POD Suffix: POD160 Land Grant: Not Reported **Drilling Started:** Not Reported Well Completed: Not Reported Plug Date: Not Reported **Completion Proved:** Not Reported Elevation: Not Reported Well Depth (ft): 0 Groundwater Source: Not Reported % Shallow: 0 Depth to Water: 0 Not Reported OSE Filing Date: Not Reported Well Schedule Date: Well Use: Not Reported Pump Type: Not Reported Pump Serial #: Not Reported Discharge Pipe Size: Not Reported Not Reported Max Diversion Allowed: Not Reported Aquifer: Surface Water Diversion: Not Reported Est Yield (Gal/Min): 0 POD Status: Pending Casing Size: 0 Pod Subbasin: Middle Rio Grande Well Tag: Not Reported Static Level: Not Reported Water Right Status: Permit Water Right Use: MON **Diversion Amt Allowed:** 0 G52 NM WELLS NM500000164962

NNW 1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2013-10-07T00:00:00.000Z Not Reported 80 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:**

**Rio Grande** POD137 2013-10-04T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### H53 NW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 2013-03-07T00:00:00.000Z Not Reported 83 100

### NM WELLS NM500000196412

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD129 2013-03-07T00:00:00.000Z Not Reported Not Reported Shallow 51

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G54 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

### 2013-06-12T00:00:00.000Z POL Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

### NM WELLS NM500000194777

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD155 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### G55 NNW 1/8 - 1/4 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2014-04-22T00:00:00.000Z Not Reported 76 100 2014-06-04T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000172567

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD147 2014-04-22T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

#### G56 NNW

1/8 - 1/4 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- G57 NNW 1/8 - 1/4 Mile Lower
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

I58 North 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 51334 Not Reported 2013-10-11T00:00:00.000Z Not Reported 82 100

Not Reported 51334 Not Reported 2013-10-08T00:00:00.000Z Not Reported 100 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande

80

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

MON

#### Database EDR ID Number

NM WELLS NM500000196415

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD138 2013-10-07T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### NM WELLS NM500000194783

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD161 Not Reported 0 0 Not Reported Permit 0

#### NM WELLS NM500000164964

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD140 2013-10-09T00:00:00.000Z Not Reported Not Reported Shallow 66

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### G59 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

### 2013-11-12T00:00:00.000Z POL Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

### NM WELLS NM500000194778

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD156 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### G60 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2014-04-28T00:00:00.000Z Not Reported 77 100 2014-06-04T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### NM WELLS NM500000160811

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD149 2014-04-28T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

#### G61 NNW

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- G62

NNW 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

63 WSW 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 76 100 2014-06-04T00:00:00.000Z MON Not Reported Not Reported Active Middle Rio Grande Not Reported MON

2014-04-24T00:00:00.000Z

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

51334

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD151 2014-04-24T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

EDR ID Number

NM500000160813

Database

NM WELLS

### NM WELLS NM500000194779

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD157 Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

# NM WELLS NM500000220968

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 Not Reported Not Reported Not Reported 0

- Not Reported 96214 NON Not Reported Not Reported 0
  - 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### l64 North 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

NON GRANT

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

2008-08-06T00:00:00.000Z

2008-08-12T00:00:00.000Z

88904

238

100

DOM

Active

POL

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 1

### NM WELLS NM500000169065

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 2008-08-05T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported 1 50 4 Not Reported Permit

#### G65 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2013-04-11T00:00:00.000Z Not Reported 86 100 2013-06-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000171771

1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD130 2013-04-11T00:00:00.000Z Not Reported Not Reported Shallow 56 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

Map ID Direction Distance E

Elevation			Database	EDR ID Number
J66 ENE 1/4 - 1/2 Mile Higher			NM WELLS	NM5000000190892
Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion:	Not Reported 49152 Not Reported Not Reported 0 100 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min):	POD1       arted:     Not Reported       Arted:     Not Reported       Not Reported     Not Reported       ter Source:     Not Reported       Vater:     0       dule Date:     Not Reported       e:     Not Reported       Pipe Size:     Not Reported       sion Allowed:     Not Reported       Gal/Min):     0       re:     0       Not Reported       H Status:     Expired	
POD Status: Pod Subbasin: Static Level: Water Right Use:	Not Reported Middle Rio Grande Not Reported SAN	Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:		
67 NW 1/4 - 1/2 Mile Lower			NM WELLS	NM500000033067
Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use:	Not Reported 00558 Not Reported 1957-06-16T00:00:00.000Z Not Reported 30 100 1958-09-02T00:00:00.000Z Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	Rio Grande Not Reported 1957-06-16T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported	

- Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Water Right Status: Diversion Amt Allowed:

Not Reported 0 0 Not Reported Permit 3

Not Reported

K68 ESE 1/4 - 1/2 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 56500 NA 1993-01-04T00:00:00.000Z Not Reported 180 100

#### NM WELLS NM500000007184

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Well Tag:

Rio Grande POD1 1993-01-04T00:00:00.000Z Not Reported Not Reported Shallow 140

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### L69 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1993-01-12T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

1956-12-23T00:00:00.000Z

1957-01-02T00:00:00.000Z

00080

90

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 20 4.5 Not Reported Permit 3

### NM WELLS NM500000019532

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande Not Reported 1956-12-20T00:00:00.000Z Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit

#### L70 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 00080 Not Reported Not Reported Not Reported 0 100 1959-06-01T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM500000023097

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Х Not Reported Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

Map ID Direction Distance Elevation

#### L71 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 79829 Not Reported 2003-06-16T00:00:00.000Z Not Reported 278 100 2003-06-19T00:00:00.000Z SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Database EDR ID Number

NM WELLS NM500000132048

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 2003-06-16T00:00:00.000Z Not Reported Not Reported Shallow 45 Not Reported Not Reported Not Reported 3 40 4 Not Reported Permit 3

#### K72 ESE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 89101 NON GRANT 2007-05-26T00:00:00.000Z Not Reported 280 100 2007-06-05T00:00:00.000Z DRNK/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000104327

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2007-05-25T00:00:00.000Z Not Reported Not Reported Shallow 172 Not Reported Not Reported Not Reported 1 30 4 Not Reported Permit 1

#### H73 NW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 93426 Not Reported Not Reported Not Reported 0 0

### NM WELLS NM500000151074

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD2 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### H74 NW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

# Not Reported 93426 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported

MON

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Pending

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 0

### NM WELLS NM500000151075

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD3 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### L75 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-07-20T00:00:00.000Z Not Reported 50 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000153256

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD103 2009-07-20T00:00:00.000Z Not Reported 4943 Shallow 34 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Map ID Direction Distance Elevation

### M76 NNW

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- M77 NNW 1/4 - 1/2 Mile

Lower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:

Well Use:

Aquifer:

Pump Serial #:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

Surface Water Diversion:

Not Reported 00541 Not Reported 1959-05-06T00:00:00.000Z 1961-04-04T00:00:00.000Z 112 100 1959-05-12T00:00:00.000Z SUBDIVISION Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SUB

Not Reported 01959 Not Reported 1958-05-01T00:00:00.000Z Not Reported 82 100 1958-07-24T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

Database EDR ID Number

**Rio Grande** 

NM WELLS NM500000017012

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported 1958-05-01T00:00:00.000Z Not Reported Shallow 35 Not Reported Not Reported Not Reported Not Reported 0 7 Not Reported Permit 3

### NM WELLS NM500000143378

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** A 1959-04-28T00:00:00.000Z Not Reported Not Reported Shallow 44 Not Reported Not Reported Not Reported Not Reported 30 12 Not Reported Permit 0

I78 North 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 51334 Not Reported 2015-10-16T00:00:00.000Z Not Reported 98 100

### NM WELLS NM500000198725

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD165 2015-10-14T00:00:00.000Z Not Reported Not Reported Shallow 58

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 79 South 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

### 2016-08-03T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Not Reported

1989-03-22T00:00:00.000Z

1989-08-01T00:00:00.000Z

1989-04-17T00:00:00.000Z

02916

274

100

DAI

DAI, DOM

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 20 4 Not Reported Permit 0

### NM WELLS NM500000025562

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** -S 2 1989-03-20T00:00:00.000Z Not Reported Not Reported Shallow 90 Not Reported SUBMER 3IN. Not Reported 0 0 Not Reported Permit 35

#### M80 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 93074 Not Reported 2012-07-03T00:00:00.000Z Not Reported 78 100 2013-07-19T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000099319

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD6 2012-07-02T00:00:00.000Z Not Reported Not Reported Shallow 57 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

Map ID Direction Distance Elevation

#### M81 NNW

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 93074 Not Reported 2012-05-17T00:00:00.000Z Not Reported 80 100 2013-07-19T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

### Database EDR ID Number

NM WELLS NM500000099317

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD4 2012-05-17T00:00:00.000Z Not Reported Not Reported Shallow 50 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

### N82 North 1/4 - 1/2 Mile

Lower Well Name: POD #: Land Grant:

- Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2015-10-20T00:00:00.000Z Not Reported 98 100 2016-08-03T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000198726

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD166 2015-10-19T00:00:00.000Z Not Reported Not Reported Shallow 58 Not Reported Not Reported Not Reported Not Reported 20 4 Not Reported Permit 0

#### M83 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 93074 Not Reported 2012-05-22T00:00:00.000Z Not Reported 77 100

## NM WELLS NM500000099320

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD7 2012-05-22T00:00:00.000Z Not Reported Not Reported Shallow

57

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### M84 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

### 2013-07-19T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Pending

MON

93074

0

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

### NM WELLS NM500000060120

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### N85 North 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2016-06-08T00:00:00.000Z Not Reported 80 100 2016-08-03T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000198727

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD167 2016-06-04T00:00:00.000Z Not Reported Not Reported Shallow 51 Not Reported Not Reported Not Reported Not Reported 11 4 Not Reported Permit 0

Map ID Direction Distance Elevation

#### Database EDR ID Number M86 NM WELLS NM500000060122 NNW 1/4 - 1/2 Mile Lower Well Name: Not Reported POD Basin: **Rio Grande** POD #: 93074 POD Suffix: POD3 Land Grant: Not Reported **Drilling Started:** Not Reported Well Completed: Not Reported Plug Date: Not Reported **Completion Proved:** Not Reported Elevation: Not Reported Well Depth (ft): 0 Groundwater Source: Not Reported % Shallow: 0 Depth to Water: 0 Not Reported OSE Filing Date: Not Reported Well Schedule Date: Well Use: Not Reported Pump Type: Not Reported Pump Serial #: Not Reported Discharge Pipe Size: Not Reported Not Reported Max Diversion Allowed: Not Reported Aquifer: Surface Water Diversion: Not Reported Est Yield (Gal/Min): 0 POD Status: Pending Casing Size: 0 Pod Subbasin: Middle Rio Grande Well Tag: Not Reported Static Level: Not Reported Water Right Status: Permit Water Right Use: MON **Diversion Amt Allowed:** 0 M87

NNW 1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 93074 Not Reported 2012-05-23T00:00:00.000Z Not Reported 77 100 2013-07-19T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000099321

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD8 2012-05-23T00:00:00.000Z Not Reported Not Reported Shallow 57 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### M88 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 93074 Not Reported Not Reported Not Reported 0 0

### NM WELLS NM500000060121

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD2 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### M89 NNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

Not Reported 93074

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

77

100

MON

Active

MON

2012-05-18T00:00:00.000Z

2013-07-19T00:00:00.000Z

Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### NM WELLS NM500000099318

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD5 2012-05-18T00:00:00.000Z Not Reported Not Reported Shallow 51 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit

# N90 North 1/4 - 1/2 Mile Lower

Epa region: Pwsid: Cityserved: Zipserved: Status: Pwssvcconn: Pwstype: Contact: Contactphone: Contactaddress2: Contactstate: Pwsactivitycode:

Pwsid: Facname: Facactivitycode: Trtprocess:

PWS ID: PWS name: PWS city:

# 06 NM3595501 Not Reported Not Reported Closed NTNCWS TURNER, LOUISE 505-877-5763 5629 ISLETA BLVD SW NM Ν

NM3595501 **TREATMENT PLANT #1** Α hypochlorination, post

NM3595501 Not Reported Not Reported

### State: Pwsname: Stateserved: Fipscounty: Retpopsrvd: Psource longname: Owner: Contactorgname: Contactaddress1: Contactcity: Contactzip:

Facid: Factype: Trtobjective: Factypecode:

PWS type: PWS address: PWS state:

#### FRDS PWS NM3595501

0

NM CASA ANGELICA NM 35001 0 Groundwater Private TURNER, LOUISE Not Reported ALBUQUERQUE 87105

9429 Treatment\_plant disinfection TP

Not Reported Not Reported Not Reported

PWS zip: PWS type code: Contact: Contact address: Contact state: Contact telephone: PWS ID: Date system activated: Retail population: System address: System city: System zip: Population served: Latitude: Latitude: Latitude: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code:

Not Reported NTNC TURNER, LOUISE ALBUQUERQUE 87 Not Reported NM3595501 7706 00000043 Not Reported ALBUQUERQUE 87105 Under 101 Persons 345950 350503 345950 104 NM 3100 23 110 Not Reported Not Reported 04/30/2004 49396 NM 5000 52 350 0 0 Not Reported 50302 NM 3100 23 110 Not Reported Not Reported 08/31/2002 653694 NM 3100 23 110 Not Reported Not Reported 09/30/2007 653695 NM 7500

75

PWS name: Retail population served: Contact address: Contact city: Contact zip:

Activity status: Date system deactivated: System name: System address: System state:

Treatment:

Longitude:

Longitude:

Longitude:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: CASA ANGELICA 69 5629 ISLETA BLVD SW NM 505-877-57

Active Not Reported CASA ANGELICA 5625 ISLETA BLVD. S.W. NM

Untreated

1063933

1063902

1063933

S 2004 Coliform (TCR) Monitoring, Routine Major (TCR) TCR Not Reported 04/01/2004

S 1996 Lead and Copper Rule Follow-up Or Routine LCR Tap M/R LCR Not Reported 06/01/1996

S 2002 Coliform (TCR) Monitoring, Routine Major (TCR) TCR Not Reported 08/01/2002

S 2007 Coliform (TCR) Monitoring, Routine Major (TCR) TCR Not Reported 09/01/2007

S 2008 Public Notice PN Violation for NPDWR Violation

Rule code: Violation measur: State mcl: Cmp edt:

System Name: Contaminant: Compliance End: Enforcement Date:

System Name: Contaminant: 410 Not Reported Not Reported Not Reported

CASA ANGELICA 3100 4/30/2004 0:00:00 6/15/2004 0:00:00

CASA ANGELICA 3100 4/30/2004 0:00:00 5/26/2004 0:00:00

CASA ANGELICA 3100 04/30/04 06/15/04

CASA ANGELICA 3100 04/30/04 05/26/04

CASA ANGELICA 3100 04/30/04 05/26/04

CASA ANGELICA 3100 4/30/2004 0:00:00 5/26/2004 0:00:00

CASA ANGELICA 5000 12/31/2025 0:00:00 No Enf Action as of

CASA ANGELICA 5000 12/31/2025 0:00:00 4/12/2007 0:00:00

CASA ANGELICA 3100 08/31/02 10/04/02

CASA ANGELICA 3100 8/31/2002 0:00:00 9/17/2002 0:00:00

CASA ANGELICA 3100 8/31/2002 0:00:00 10/4/2002 0:00:00

CASA ANGELICA 3100 Rule name: Unit of measure: Cmp bdt:

Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Violation Type: Compliance Begin: PN rule Not Reported 12/07/2008

23 4/1/2004 0:00:00 104 SIF

23 4/1/2004 0:00:00 104 SIA

23 04/01/04 104 SIF

23 04/01/04 104 SIE

23 04/01/04 104 SIA

23 4/1/2004 0:00:00 104 SIE

52 6/1/1996 0:00:00 49396 10/17/2006 0:00:00

52 6/1/1996 0:00:00 49396 Not Reported

23 08/01/02 50302 SIF

23 8/1/2002 0:00:00 50302 SIE

23 8/1/2002 0:00:00 50302 SIF

23 08/01/02

Compliance End: Enforcement Date:

System Name: Contaminant: Compliance End: Enforcement Date:

System Name: Contaminant: Compliance End: Enforcement Date:

System Name: Contaminant: Compliance End: Enforcement Date:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category: 08/31/02 09/17/02

CASA ANGELICA 3100 08/31/02 09/17/02

CASA ANGELICA 3100 8/31/2002 0:00:00 9/17/2002 0:00:00

CASA ANGELICA 5000 2015-12-31 Not Reported

104 2004 St Public Notif requested

104 2004 St Violation/Reminder Notice Informal

104 2004 St Public Notif received

50302 2002 St Violation/Reminder Notice Informal

50302 2002 St Public Notif requested

50302 2003 St Public Notif received

653694 2008 St Public Notif requested

653694 2008 St Violation/Reminder Notice Informal

653695 2011 St Compliance achieved

Not Reported 2002 St Violation/Reminder Notice Not Reported Violation ID: Enforcement Action:

Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: SIE 23

50302

08/01/02 50302 SIA

23 8/1/2002 0:00:00 50302 SIA

52 1996-06-01 9600493 Not Reported

S 05/26/2004 Informal

S 05/26/2004

S 06/15/2004 Informal

S 09/17/2002

S 09/17/2002 Informal

S 10/04/2002 Informal

S 12/07/2007 Informal

S 12/07/2007

S 10/22/2010 Resolving

S 01/14/2002

Violation ID: Enforcemnt FY: Enforcement Detail:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Not Reported 2003 St Compliance achieved

CASA ANGELICA NTNC COLIFORM (TCR) 4/1/2004 0:00:00 5/26/2004 0:00:00 Not Reported

CASA ANGELICA NTNC COLIFORM (TCR) 4/1/2004 0:00:00 5/26/2004 0:00:00 Not Reported

CASA ANGELICA NTNC COLIFORM (TCR) 4/1/2004 0:00:00 6/15/2004 0:00:00 Not Reported

CASA ANGELICA NTNC LEAD & COPPER RULE 6/1/1996 0:00:00 No Enf Action as of 0

CASA ANGELICA NTNC COLIFORM (TCR) 8/1/2002 0:00:00 10/4/2002 0:00:00 Not Reported

CASA ANGELICA NTNC COLIFORM (TCR) 8/1/2002 0:00:00 9/17/2002 0:00:00 Not Reported

CASA ANGELICA NTNC COLIFORM (TCR) 8/1/2002 0:00:00 9/17/2002 0:00:00 Not Reported

CASA ANGELICA NTNC COLIFORM (TCR) 9/1/2007 0:00:00 12/7/2007 0:00:00 Not Reported

CASA ANGELICA NTNC Orig Code: Enforcement Action: Enforcement Category:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: S 01/13/2003 Not Reported

69 104 Monitoring, Routine Major (TCR) 4/30/2004 0:00:00 State Violation/Reminder Notice

69 104 Monitoring, Routine Major (TCR) 4/30/2004 0:00:00 State Public Notif Requested

69 104 Monitoring, Routine Major (TCR) 4/30/2004 0:00:00 State Public Notif Received

69 49396 Follow-up and Routine Tap Sampling 12/31/2025 0:00:00 7/8/2009 0:00:00

69 50302 Monitoring, Routine Major (TCR) 8/31/2002 0:00:00 State Public Notif Received

69 50302 Monitoring, Routine Major (TCR) 8/31/2002 0:00:00 State Violation/Reminder Notice

69 50302 Monitoring, Routine Major (TCR) 8/31/2002 0:00:00 State Public Notif Requested

69 653694 Monitoring, Routine Major (TCR) 9/30/2007 0:00:00 State Violation/Reminder Notice

69 653694

Contaminant: Compliance start date: Enforcement date: Violation measurement: COLIFORM (TCR) 9/1/2007 0:00:00 12/7/2007 0:00:00 Not Reported Violation type: Compliance end date: Enforcement action:

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Monitoring, Routine Major (TCR) 9/30/2007 0:00:00 State Public Notif Requested

N91 North 1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 96535 NON 2017-04-11T00:00:00.000Z Not Reported 263 100 2017-04-19T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### NM WELLS

NM5000000209591

**Rio Grande** POD1 2017-04-10T00:00:00.000Z Not Reported Not Reported Shallow 67 Not Reported Not Reported Not Reported Not Reported 70 4 Not Reported Permit 1

NM WELLS NM500000153294

Rio Grande POD112 2009-06-18T00:00:00.000Z Not Reported 5035 Shallow 128 Not Reported Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

#### NM WELLS NM500000087386

Rio Grande Not Reported 1999-01-06T00:00:00.000Z

#### J92 ENE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

O93 ENE 1/4 - 1/2 Mile Higher

> Well Name: POD #: Land Grant:

Not Reported 70593 Not Reported

Middle Rio Grande

2009-06-22T00:00:00.000Z

2009-12-30T00:00:00.000Z

51334

142

100

MON

Active

MON

POD Basin: POD Suffix: Drilling Started: 0

Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1999-01-06T00:00:00.000Z Not Reported 240 100 1999-02-16T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Not Reported

Not Reported

DOM/SAN

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

SAN

2002-06-06T00:00:00.000Z

2002-11-26T00:00:00.000Z

78066

300

100

Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported Not Reported 40 4 Not Reported Permit 3

#### NM WELLS NM500000105812

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD Basin:

POD Suffix:

Plug Date:

Elevation:

**Drilling Started:** 

Depth to Water:

Est Yield (Gal/Min):

Water Right Status:

Pump Type:

Casing Size:

Well Tag:

**Rio Grande** Not Reported 2002-06-06T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported 3 40 4 Not Reported Permit 3

#### NM WELLS NM500000012098

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported Groundwater Source: 0 Well Schedule Date: Not Reported Not Reported Discharge Pipe Size: Not Reported Not Reported Max Diversion Allowed: 0 0 Not Reported Cancelled **Diversion Amt Allowed:** 0

#### **O94** ENE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

P95 West 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 24014 Not Reported Not Reported Not Reported 0 100 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Map ID Direction Distance Elevation

#### P96 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 08228 Not Reported 1962-11-23T00:00:00.000Z Not Reported 74 100 1963-01-08T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000012080

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1962-11-23T00:00:00.000Z Not Reported Not Reported Shallow 34 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

#### P97 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 07819 Not Reported 1962-09-04T00:00:00.000Z Not Reported 65 100 1962-09-06T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

### NM WELLS NM500000012284

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1962-08-29T00:00:00.000Z Not Reported Not Reported Shallow 20 Not Reported Not Reported Not Reported Not Reported 0 5 Not Reported Permit 3

#### P98 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 25827 Not Reported 1975-04-09T00:00:00.000Z Not Reported 60 100

## NM WELLS NM500000012661

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1975-04-09T00:00:00.000Z Not Reported Not Reported Shallow 32

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P99 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1975-04-21T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1969-07-31T00:00:00.000Z

1969-12-23T00:00:00.000Z

16843

75

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

### NM WELLS NM500000012623

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported 1969-07-29T00:00:00.000Z Not Reported Not Reported Shallow 34 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P100 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 24606 Not Reported 1974-03-25T00:00:00.000Z Not Reported 51 100 1974-04-04T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM500000010588

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1974-03-25T00:00:00.000Z Not Reported 4800 Shallow 18 Not Reported Not Reported Not Reported Not Reported 0 2.38 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P101 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 09537 Not Reported 1963-08-28T00:00:00.000Z Not Reported 80 100 1963-10-24T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000010062

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1963-08-28T00:00:00.000Z Not Reported Not Reported Shallow 33 Not Reported Not Reported Not Reported Not Reported 0 3 Not Reported Permit 3

#### P102 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 32575 Not Reported 1979-06-20T00:00:00.000Z Not Reported 201 100 1979-10-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM500000010627

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1979-06-19T00:00:00.000Z Not Reported Not Reported Shallow 60 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P103 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 27914 Not Reported Not Reported Not Reported 0 100

### NM WELLS NM500000011832

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P104 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1963-07-02T00:00:00.000Z

1963-07-05T00:00:00.000Z

09229

0

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 3

### NM WELLS NM500000011487

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

# Rio Grande Not Reported 1963-06-27T00:00:00.000Z Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit

#### P105 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 26954 Not Reported 1976-04-01T00:00:00.000Z Not Reported 5 100 1976-07-30T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM500000016655

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 Not Reported Not Reported Not Reported Shallow 8 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

Map ID Direction Distance

Elevation			Database	EDR ID Number
P106 West 1/4 - 1/2 Mile Lower			NM WELLS	NM500000016109
Well Name:	Not Reported	POD Basin:	Rio Grande	
POD #:	31725	POD Suffix:	POD1	
Land Grant:	Not Reported	Drilling Started:	Not Reported	
Well Completed:	Not Reported	Plug Date:	Not Reported	
Completion Proved:	Not Reported	Elevation:	Not Reported	
Well Depth (ft):	0	Groundwater Source:	Not Reported	
% Shallow:	100	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:	Not Reported	
Well Use:	Not Reported	Pump Type:	Not Reported	
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not Reported	
Aquifer:	Not Reported	Max Diversion Allowed:	Not Reported	
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Not Reported	Casing Size:	0	
Pod Subbasin:	Middle Rio Grande	Well Tag:	Not Reported	
Static Level:	Not Reported	Water Right Status:	Permit	
Water Right Use:	DOM	Diversion Amt Allowed:	3	
P107 West 1/4 - 1/2 Mile Lower			NM WELLS	NM500000017666
Well Name:	Not Reported	POD Basin:	Rio Grande	
POD #:	08296	POD Suffix:	Not Reported	
Land Grant:	Not Reported	Drilling Started:	1963-04-09T00:00:00.000Z	
Well Completed:	1963-04-09T00:00:00.000Z	Plug Date:	Not Reported	
Completion Proved:	Not Reported	Elevation:	Not Reported	
Mall Death (ft):	62	Croundwater Sources	Shallow	

Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

Surface Water Diversion:

- 63 100 1963-10-02T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM
- Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:**

Shallow 30 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

# P108 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 29425 Not Reported 1977-10-05T00:00:00.000Z Not Reported 200 100

#### NM WELLS NM500000017917

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 1977-10-03T00:00:00.000Z Not Reported Not Reported Shallow 56

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P109 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1978-01-05T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1982-11-20T00:00:00.000Z

1983-01-03T00:00:00.000Z

38889

77

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 5 Not Reported Permit 3

### NM WELLS NM500000017744

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1982-11-20T00:00:00.000Z Not Reported Not Reported Shallow 21 Not Reported Not Reported Not Reported Not Reported 60 4.5 Not Reported Permit 3

#### P110 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 11731 Not Reported 1964-09-15T00:00:00.000Z Not Reported 55 100 1964-09-24T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM500000013378

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1964-09-15T00:00:00.000Z Not Reported Not Reported Shallow 24 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P111 West

1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 1957-01-04T00:00:00.000Z Not Reported 82 100 1957-01-14T00:00:00.000Z Not Reported Not Reported Not Reported Active Not Reported Not Reported Not Reported Not Reported DOM

Not Reported

00133

### Database EDR ID Number

NM WELLS NM500000013345

POD Basin:		
POD Suffix:		
Drilling Started:		
Plug Date:		
Elevation:		
Groundwater Source:		
Depth to Water:		
Well Schedule Date:		
Pump Type:		
Discharge Pipe Size:		
Max Diversion Allowed:		
Est Yield (Gal/Min):		
Casing Size:		
Well Tag:		
Water Right Status:		
Diversion Amt Allowed:		

**Rio Grande** Not Reported 1957-01-01T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

#### P112 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 25440 Not Reported 1974-11-11T00:00:00.000Z Not Reported 73 100 1974-11-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM500000013650

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1974-11-11T00:00:00.000Z Not Reported Not Reported Shallow 35 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

P113 West 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 12391 Not Reported 1965-04-07T00:00:00.000Z Not Reported 86 100

# NM WELLS NM500000015418

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported 1965-04-05T00:00:00.000Z Not Reported Not Reported Shallow 30

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P114 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1965-10-18T00:00:00.000Z DOMESTIC Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

DOMESTIC

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1965-03-03T00:00:00.000Z

1965-05-12T00:00:00.000Z

12255

77

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

### NM WELLS NM500000014657

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande Not Reported 1965-02-26T00:00:00.000Z Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit

#### P115 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 07117 Not Reported 1962-03-29T00:00:00.000Z Not Reported 45 100 1962-04-06T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM50000003977

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1962-03-29T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

Map ID Direction Distance Elevation

### P116 West

P117

West 1/4 - 1/2 Mile Lower

Well Name:

Land Grant:

Well Completed:

Well Depth (ft):

OSE Filing Date:

Surface Water Diversion:

Pump Serial #:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

% Shallow:

Well Use:

Aquifer:

**Completion Proved:** 

POD #:

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 1975-08-23T00:00:00.000Z Not Reported 65 100 1975-10-02T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

DOMESTIC

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1966-07-18T00:00:00.000Z

1966-10-14T00:00:00.000Z

14136

74

100

Not Reported

26390

### Database EDR ID Number

**Rio Grande** 

Not Reported

Shallow

32

0

3

NM WELLS

4.5

Permit

POD1

NM WELLS NM500000003706

1975-08-21T00:00:00.000Z

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported

NM500000005711

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

1966-07-18T00:00:00.000Z Not Reported Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

### P118 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 33059 Not Reported 1979-08-27T00:00:00.000Z Not Reported 196 100

## NM WELLS NM50000006838

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1979-08-24T00:00:00.000Z Not Reported Not Reported Shallow 38

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P119 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P120 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1979-10-01T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

DOM

Middle Rio Grande

17793

100

100

DOM

Middle Rio Grande

12895

0

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

### NM WELLS NM500000005925

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

### NM WELLS NM500000001585

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P121 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 09345 Not Reported 1963-07-24T00:00:00.000Z Not Reported 304 100 1963-10-22T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000000462

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1963-07-10T00:00:00.000Z Not Reported Not Reported Shallow 35 Not Reported Not Reported Not Reported Not Reported 0 6.63 Not Reported Permit 3

#### P122 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 13836 Not Reported 1966-05-05T00:00:00.000Z Not Reported 77 100 1966-09-30T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM50000001685

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1966-04-28T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 5 Not Reported Permit 3

#### P123 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 18483 Not Reported Not Reported Not Reported 80 100

## NM WELLS NM500000002811

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P124 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1975-04-05T00:00:00.000Z

1975-06-26T00:00:00.000Z

25811

73

100

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 0 4 Not Reported Permit 3

### NM WELLS NM500000002144

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1975-04-04T00:00:00.000Z Not Reported Not Reported Shallow 41 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P125 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 14490 Not Reported 1966-12-02T00:00:00.000Z Not Reported 93 100 1967-06-23T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM50000009229

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1966-12-01T00:00:00.000Z Not Reported Not Reported Shallow 37 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P126 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 08973 Not Reported 1963-08-01T00:00:00.000Z Not Reported 177 100 1964-01-10T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM50000008753

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1963-08-01T00:00:00.000Z Not Reported Not Reported Shallow 43 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 3

#### P127 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 31340 Not Reported 1978-10-12T00:00:00.000Z Not Reported 86 100 1979-09-17T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM50000009520

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1978-10-10T00:00:00.000Z Not Reported Not Reported Shallow 38 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

### P128 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 07100 Not Reported 1962-09-13T00:00:00.000Z Not Reported 76 100

### NM WELLS NM500000009791

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande Not Reported 1962-09-03T00:00:00.000Z Not Reported Not Reported Shallow 37

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P129 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1962-10-25T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1980-04-02T00:00:00.000Z

1980-07-24T00:00:00.000Z

34021

90

100

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 0 3 Not Reported Permit 3

### NM WELLS NM500000009524

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Shallow q Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P130 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 33151 Not Reported 1980-01-04T00:00:00.000Z Not Reported 186 100 1980-01-14T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM50000007553

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1980-01-02T00:00:00.000Z Not Reported Not Reported Shallow 25 Not Reported Not Reported Not Reported Not Reported 0 6.63 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P131 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 1979-06-01T00:00:00.000Z Not Reported 110 100 1979-12-05T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

32800

### Database EDR ID Number

**Rio Grande** 

POD1

NM WELLS NM500000006862

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

1979-06-01T00:00:00.000Z Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported 20 4.5 Not Reported Permit 3

#### P132 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 23600 Not Reported 1973-07-09T00:00:00.000Z Not Reported 133 100 1973-10-24T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Plugged Middle Rio Grande Not Reported DOM

## NM WELLS NM50000008158

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1973-07-05T00:00:00.000Z 2013-04-05T00:00:00.000Z Not Reported Shallow 36 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P133 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 25826 Not Reported 1975-04-09T00:00:00.000Z Not Reported 68 100

### NM WELLS NM50000008458

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1975-04-09T00:00:00.000Z Not Reported Not Reported Shallow 32

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P134 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1975-04-21T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

DOMESTIC

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1964-02-04T00:00:00.000Z

1964-02-27T00:00:00.000Z

10290

57

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

### NM WELLS NM50000008198

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported 1964-02-04T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

#### P135 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 08298 Not Reported 1962-12-08T00:00:00.000Z Not Reported 77 100 1963-02-20T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### NM WELLS NM500000025082

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1962-12-07T00:00:00.000Z Not Reported Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Map ID Direction Distance Elevation

#### P136 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 26632 Not Reported 1975-11-13T00:00:00.000Z Not Reported 90 100 1975-11-21T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000024867

**Rio Grande** POD1 1975-11-13T00:00:00.000Z Not Reported Not Reported Shallow 38 Not Reported Not Reported Not Reported Not Reported 60 5.56 Not Reported Permit 3

#### P137 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 38323 Not Reported 1982-07-10T00:00:00.000Z Not Reported 103 100 1982-07-27T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM500000025731

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1982-07-10T00:00:00.000Z Not Reported Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported 50 4.5 Not Reported Permit 3

#### P138 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 20448 Not Reported 1972-04-25T00:00:00.000Z Not Reported 254 100

## NM WELLS NM500000026669

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1972-04-06T00:00:00.000Z Not Reported Not Reported Shallow 15

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P139 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

# 1972-04-26T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1976-09-07T00:00:00.000Z

1976-10-12T00:00:00.000Z

26953

132

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

### NM WELLS NM500000026132

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1976-08-20T00:00:00.000Z Not Reported Not Reported Shallow 24 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P140 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 25650 Not Reported 1975-02-28T00:00:00.000Z Not Reported 185 100 1975-06-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

# NM WELLS NM500000024132

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1975-02-21T00:00:00.000Z Not Reported Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

Map ID Direction Distance 

Elevation			Database	EDR ID Number	
P141 West 1/4 - 1/2 Mile Lower			NM WELLS	NM500000023808	
Well Name:	Not Reported	POD Basin:	Rio Grande		
POD #:	21275	POD Suffix:	POD1		
Land Grant:	Not Reported	Drilling Started:	Not Reported Not Reported Not Reported O Not Reported Not Reported Not Reported Not Reported O O Not Reported		
Well Completed:	Not Reported	Plug Date:			
Completion Proved:	Not Reported	Elevation: Groundwater Source:			
Well Depth (ft):	0				
% Shallow:	100	Depth to Water:			
OSE Filing Date:	Not Reported	Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:			
Well Use:	Not Reported				
Pump Serial #:	Not Reported				
Aquifer:	Not Reported				
Surface Water Diversion:	Not Reported				
POD Status:	Not Reported				
Pod Subbasin:	Middle Rio Grande				
Static Level:	Not Reported	Water Right Status:	Cancelled		
Water Right Use:	DOM	Diversion Amt Allowed:	0		
P142 West 1/4 - 1/2 Mile Lower			NM WELLS	NM500000024324	
Well Name:	Not Reported	POD Basin:	Rio Grande		
POD #:	19666	POD Suffix:	POD1		
Land Grant:	Not Reported	Drilling Started:	1971	1971-11-01T00:00:00.000Z	

Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

P143 West 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 1971-11-10T00:00:00.000Z Not Reported 134 100 1972-01-07T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

Not Reported

32344

0

100

Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:

Water Right Status:

**Diversion Amt Allowed:** 

1971-11-01T00:00:00.000Z Not Reported Not Reported Shallow 36 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### NM WELLS NM500000024569

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P144 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1962-07-12T00:00:00.000Z

1962-07-24T00:00:00.000Z

07654

73

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

#### NM WELLS NM500000024367

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1962-07-12T00:00:00.000Z Not Reported Shallow 15 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit

#### P145 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 26633 Not Reported 1975-11-14T00:00:00.000Z Not Reported 90 100 1975-11-21T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000029795

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1975-11-14T00:00:00.000Z Not Reported Not Reported Shallow 38 Not Reported Not Reported Not Reported Not Reported 60 5.56 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P146 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- P147 West 1/4 - 1/2 Mile Lower
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

P148 West 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 48360 Not Reported 1987-11-04T00:00:00.000Z Not Reported 317 100

Not Reported 25766 Not Reported 1975-04-04T00:00:00.000Z Not Reported 74 100 1975-06-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported

DOM

Not Reported

DOM

Middle Rio Grande

22376

0

100

#### Database EDR ID Number

NM WELLS NM500000029741

POD Basin:	Rio Grande
POD Suffix:	POD1
Drilling Started:	1975-04-01T00:00:00.000Z
Plug Date:	Not Reported
Elevation:	Not Reported
Groundwater Source:	Shallow
Depth to Water:	25
Well Schedule Date:	Not Reported
Pump Type:	Not Reported
Discharge Pipe Size:	Not Reported
Max Diversion Allowed:	Not Reported
Est Yield (Gal/Min):	0
Casing Size:	4.5
Well Tag:	Not Reported
Water Right Status:	Permit
Diversion Amt Allowed:	3

#### NM WELLS NM500000033261

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 Not Reported 0 0 Not Reported Cancelled 0

#### NM WELLS NM500000176474

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 1987-11-04T00:00:00.000Z Not Reported Not Reported Shallow 30

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P149 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1987-11-13T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Plugged

POL

2006-10-20T00:00:00.000Z

2007-02-15T00:00:00.000Z

88557

110

100

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 60 6 Not Reported Permit 3

#### NM WELLS NM500000053408

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 2006-10-19T00:00:00.000Z 2006-10-20T00:00:00.000Z Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### P150 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 14207 Not Reported 1966-08-04T00:00:00.000Z Not Reported 70 100 1966-10-14T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### NM WELLS NM500000027346

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1966-08-04T00:00:00.000Z Not Reported Not Reported Shallow 34 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P151 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- 17688 Not Reported 1970-07-02T00:00:00.000Z Not Reported 79 100 1970-09-11T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

#### Database EDR ID Number

NM WELLS NM500000026990

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1970-07-02T00:00:00.000Z Not Reported Not Reported Shallow 24 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P152 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 34309 Not Reported 1980-05-29T00:00:00.000Z Not Reported 90 100 1980-10-10T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000027623

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD1 Not Reported Not Reported Shallow 11 Not Reported Not Reported Not Reported O 4.5 Not Reported Permit 3

P153 West 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 01105 Not Reported 1957-07-28T00:00:00.000Z Not Reported 73 100

## NM WELLS NM500000029633

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported 1958-07-26T00:00:00.000Z Not Reported Not Reported Shallow 34

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P154 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1958-07-06T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1962-11-28T00:00:00.000Z

1962-11-20T00:00:00.000Z

08208

42

100

DOM

Active

DOM

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 0 3 Not Reported Permit 3

#### NM WELLS NM500000029326

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported 1962-11-28T00:00:00.000Z Not Reported Not Reported Shallow 5 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

#### P155 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 37232 Not Reported 1981-11-23T00:00:00.000Z Not Reported 118 100 1982-03-17T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### NM WELLS NM500000018588

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1981-11-23T00:00:00.000Z Not Reported Not Reported Shallow 68 Not Reported Not Reported Not Reported Not Reported 60 6.63 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P156 West

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

P157 West 1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 23461 Not Reported 1973-06-15T00:00:00.000Z Not Reported 116 100 1973-10-17T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported Not Reported 1974-01-23T00:00:00.000Z Not Reported 1974-02-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported

24427

60

100

Active

DOM

Database

EDR ID Number

NM WELLS NM500000018579

POD Basin: **Rio Grande** POD Suffix: POD1 1974-01-21T00:00:00.000Z Drilling Started: Plug Date: Not Reported Elevation: Not Reported Groundwater Source: Shallow Depth to Water: 25 Well Schedule Date: Not Reported Pump Type: Not Reported Discharge Pipe Size: Not Reported Max Diversion Allowed: Not Reported Est Yield (Gal/Min): 0 Casing Size: 4.5 Well Tag: Not Reported Water Right Status: Permit **Diversion Amt Allowed:** 3

> NM WELLS NM500000018941

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1973-06-12T00:00:00.000Z Not Reported Not Reported Shallow 33 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

# P158 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 11330 Not Reported 1964-06-26T00:00:00.000Z Not Reported 68 100

#### NM WELLS NM500000019215

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande Not Reported 1964-06-23T00:00:00.000Z Not Reported 5040 Shallow 28

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P159 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1964-07-06T00:00:00.000Z DOMESTIC Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

DOMESTIC

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1963-11-06T00:00:00.000Z

1963-12-17T00:00:00.000Z

09951

90

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

#### NM WELLS NM500000019126

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1963-11-05T00:00:00.000Z Not Reported Shallow 30 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit

#### P160 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 12657 Not Reported 1978-09-25T00:00:00.000Z Not Reported 128 100 1978-10-05T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000018308

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1978-09-25T00:00:00.000Z Not Reported Shallow 32 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported

# Permit

Map ID Direction Distance Elevation

#### P161 West

P162

West 1/4 - 1/2 Mile Lower

Well Name:

Land Grant:

Well Completed:

Well Depth (ft):

OSE Filing Date:

Surface Water Diversion:

Pump Serial #:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

% Shallow:

Well Use:

Aquifer:

**Completion Proved:** 

POD #:

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 10965 Not Reported 1964-05-31T00:00:00.000Z Not Reported 95 100 1965-04-27T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1974-05-13T00:00:00.000Z

1974-08-21T00:00:00.000Z

21952

183

100

#### Database EDR ID Number

NM WELLS NM500000018226

**Rio Grande** 

Not Reported

Shallow

42

0

8

3

Permit

1964-05-01T00:00:00.000Z

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Not Reported Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

> NM WELLS NM500000018327

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1974-05-10T00:00:00.000Z Not Reported Not Reported Shallow 60 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

# P163 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 36859 Not Reported 1981-09-17T00:00:00.000Z Not Reported 77 100

#### NM WELLS NM500000018459

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 1981-09-17T00:00:00.000Z Not Reported Not Reported Shallow 29

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P164 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P165 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 23417 Not Reported 1973-06-01T00:00:00.000Z Not Reported 60 100 1973-06-06T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

1981-11-13T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

DOM

Middle Rio Grande

30601

50

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 90 4.5 Not Reported Permit 3

#### NM WELLS NM500000018432

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

#### NM WELLS NM500000020997

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1973-06-01T00:00:00.000Z Not Reported Not Reported Shallow 22 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

Map ID Direction Distance Elevation

#### P166 West

P167

West 1/4 - 1/2 Mile Lower

Well Name:

Well Completed:

Well Depth (ft):

OSE Filing Date:

Surface Water Diversion:

Pump Serial #:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

% Shallow:

Well Use:

Aquifer:

**Completion Proved:** 

POD #: Land Grant:

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 29427 Not Reported 1977-10-01T00:00:00.000Z Not Reported 88 100 1978-01-05T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

DOMESTIC

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1966-01-03T00:00:00.000Z

1966-01-10T00:00:00.000Z

13436

70

100

#### Database EDR ID Number

**Rio Grande** 

Not Reported

Shallow

44

0

3

4.5

Permit

POD1

NM WELLS NM500000020966

1977-09-30T00:00:00.000Z

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

NM WELLS NM500000022118

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported 1966-01-03T00:00:00.000Z Not Reported Shallow 24 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

#### P168 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 32713 Not Reported 1979-06-19T00:00:00.000Z Not Reported 86 100

## NM WELLS NM500000023099

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1979-06-18T00:00:00.000Z Not Reported Not Reported Shallow 35

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P169 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1979-06-26T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1970-10-26T00:00:00.000Z

1971-03-15T00:00:00.000Z

18010

75

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 6.25 Not Reported Permit 3

#### NM WELLS NM500000022576

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported 1970-10-22T00:00:00.000Z Not Reported Not Reported Shallow 22 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### P170 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 08573 Not Reported 1963-03-12T00:00:00.000Z Not Reported 72 100 1963-10-24T00:00:00.000Z DOMESTIC Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### NM WELLS NM500000019502

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 1963-03-12T00:00:00.000Z Not Reported Not Reported Shallow 33 Not Reported Not Reported Not Reported 3 0 3 Not Reported Permit 3

Map ID Direction Distance

Elevation			Database	EDR ID Number
P171 West 1/4 - 1/2 Mile Lower			NM WELLS	NM5000000019332
Well Name:	Not Reported	POD Basin:	Rio Grande	
POD #:	29826	POD Suffix:	POD1	
Land Grant:	Not Reported	Drilling Started:	Not F	Reported
Well Completed:	Not Reported	Plug Date:	Not Reported	
Completion Proved:	Not Reported	Elevation:	Not Reported	
Well Depth (ft):	0	Groundwater Source:	Not Reported	
% Shallow:	100	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:	Not Reported	
Well Use:	Not Reported	Pump Type:	Not Reported	
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not Reported	
Aquifer:	Not Reported	Max Diversion Allowed:	Not Reported	
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Not Reported	Casing Size:	0	
Pod Subbasin:	Middle Rio Grande	Well Tag:	Not Reported	
Static Level:	Not Reported	Water Right Status:	Permit	
Water Right Use:	DOM	Diversion Amt Allowed:	3	
P172 West 1/4 - 1/2 Mile Lower			NM WELLS	NM500000019845

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

P173 West 1/4 - 1/2 Mile

Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 1979-10-10T00:00:00.000Z Not Reported 90 100 1979-10-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

32404

0

100

33384

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande POD1 Not Reported Not Reported Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit

# 3

#### NM WELLS NM500000020775

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### P174 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1978-08-08T00:00:00.000Z

1978-08-09T00:00:00.000Z

25827

170

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

#### NM WELLS NM500000020088

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

#### **Rio Grande** POD2 1978-08-07T00:00:00.000Z Not Reported Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 12 5.64 Not Reported Permit 3

#### Q175 NNE 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-06-24T00:00:00.000Z Not Reported 102 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

## NM WELLS NM500000153254

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD101 2009-06-23T00:00:00.000Z Not Reported 4977 Shallow 74 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

Map ID Direction Distance Elevation

#### Q176 NNE

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- N177 North 1/4 - 1/2 Mile Lower
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Q178 NNE 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON Not Reported 00541

Not Reported

SAN

Middle Rio Grande

120

100

86

100

Not Reported 51334 Not Reported 2009-07-09T00:00:00.000Z Not Reported 2009-12-30T00:00:00.000Z

#### Database EDR ID Number

NM WELLS NM500000153259

**Rio Grande** 

Not Reported

POD106

4977

74

Shallow

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

2009-07-09T00:00:00.000Z

#### NM WELLS NM500000002517

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Х3 Not Reported Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported 3 0 12 Not Reported Permit 3

#### NM WELLS NM500000194784

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD162 Not Reported Not Reported Not Reported Not Reported 0

Not Reported 51334 Not Reported Not Reported Not Reported

0 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### R179 NE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Active

DOM

1986-09-30T00:00:00.000Z

1986-10-03T00:00:00.000Z

46426

181

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 0

#### NM WELLS NM500000173880

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

#### Rio Grande POD1 1986-09-30T00:00:00.000Z Not Reported Not Reported Shallow 116 Not Reported Not Reported Not Reported Not Reported 25 4 Not Reported Permit

#### S180 NW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-07-13T00:00:00.000Z Not Reported 60 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

## NM WELLS NM500000153260

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD107 2009-07-13T00:00:00.000Z Not Reported Not Reported Shallow 44 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

Elevation:

Well Tag:

Map ID Direction Distance Elevation

#### S181 NW

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- R182 NE 1/4 - 1/2 Mile Higher
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

N183 North 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 2009-07-10T00:00:00.000Z Not Reported 75 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

51334

Database

EDR ID Number

NM WELLS NM500000153261

POD Basin: **Rio Grande** POD Suffix: POD108 2009-07-10T00:00:00.000Z Drilling Started: Plug Date: Not Reported 4952 Groundwater Source: Shallow Depth to Water: 44 Well Schedule Date: Not Reported Pump Type: Not Reported Discharge Pipe Size: Not Reported Max Diversion Allowed: Not Reported Est Yield (Gal/Min): 0 Casing Size: 2 Not Reported Water Right Status: Permit **Diversion Amt Allowed:** 0

#### NM WELLS NM500000167555

**Rio Grande** 

POD1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported 0 0 Not Reported Expired 0

#### NM WELLS NM500000194785

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD163 Not Reported Not Reported Not Reported Not Reported 0

Not Reported 51334 Not Reported

0

0

Not Reported

Not Reported

# MUL

Not Reported

44969 Not Reported Not Reported Not Reported 0 100 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### T184 SSE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Active

DAI

1986-06-06T00:00:00.000Z

1988-08-09T00:00:00.000Z

1986-06-09T00:00:00.000Z

02916

181

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 0

#### NM WELLS NM500000020612

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

#### **Rio Grande** Not Reported 1986-06-02T00:00:00.000Z Not Reported Not Reported Shallow 87 Not Reported SUBMER Not Reported 37 0 0 Not Reported Permit 35

#### T185 SSE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 02916 Not Reported 1916-01-01T00:00:00.000Z 1960-03-13T00:00:00.000Z 120 100 1959-05-12T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DAI

## NM WELLS NM500000021482

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** -S 1959-04-13T00:00:00.000Z Not Reported Not Reported Shallow 86 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 35

Map ID Direction Distance Elevation

#### R186 NE

1/4 - 1/2 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Q187 NNE 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

U188 North 1/4 - 1/2 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 2010-11-29T00:00:00.000Z Not Reported 200 100 2010-12-03T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

92210

Database EDR ID Number

NM WELLS NM500000055651

POD Basin: **Rio Grande** POD Suffix: POD1 2010-11-24T00:00:00.000Z Drilling Started: Plug Date: Not Reported Elevation: Not Reported Groundwater Source: Shallow Depth to Water: 100 Well Schedule Date: Not Reported Pump Type: Not Reported Discharge Pipe Size: Not Reported Max Diversion Allowed: Not Reported Est Yield (Gal/Min): 40 Casing Size: 4 Well Tag: Not Reported Water Right Status: Permit **Diversion Amt Allowed:** 1

NM WELLS NM500000194786

**Rio Grande** 

POD164

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

## NM WELLS NM500000157707

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 Not Reported Not Reported Not Reported 0

TC5672600.5s Page 93

Not Reported 93539 NA Not Reported Not Reported 0

Not Reported

DOM

Middle Rio Grande

91619

NON

0

100

DOM

Middle Rio Grande

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 189 West 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### V190 NNE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 73891 Not Reported 2000-05-18T00:00:00.000Z Not Reported 250 100 2000-11-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 1

#### NM WELLS NM500000138446

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 1

#### NM WELLS NM500000093897

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 2000-05-18T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported 3 20 4 Not Reported Permit 3

Map ID Direction Distance Elevation

#### V191 NNE

1/4 - 1/2 Mile Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 72900 Not Reported 2000-01-31T00:00:00.000Z Not Reported 200 100 2000-02-08T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### Database EDR ID Number

NM WELLS NM500000219255

POD Basin:
POD Suffix:
Drilling Started:
Plug Date:
Elevation:
Groundwater Source:
Depth to Water:
Well Schedule Date:
Pump Type:
Discharge Pipe Size:
Max Diversion Allowed:
Est Yield (Gal/Min):
Casing Size:
Well Tag:
Water Right Status:
Diversion Amt Allowed:

**Rio Grande** Not Reported 2000-01-31T00:00:00.000Z Not Reported Not Reported Shallow 88 Not Reported Not Reported Not Reported 3 30 5 Not Reported Permit 3

#### U192 North 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 46327 Not Reported 1986-09-10T00:00:00.000Z Not Reported 300 100 1986-09-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000173442

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1986-09-08T00:00:00.000Z Not Reported Not Reported Shallow 100 Not Reported Not Reported Not Reported Not Reported 20 6.63 Not Reported Permit 3

#### W193 WNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 74506 Not Reported 2001-02-20T00:00:00.000Z Not Reported 80 100

## NM WELLS NM500000100638

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported 2001-02-20T00:00:00.000Z Not Reported Shallow 10

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### X194 ENE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

2001-05-01T00:00:00.000Z ONE HOUSEHOLD Not Reported Not Reported Active Not Reported Not Reported Not Reported DOM

Not Reported 81680

NON GRANT

Not Reported

DRNK./SAN.

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

SAN

258

100

2004-01-23T00:00:00.000Z

2004-01-30T00:00:00.000Z

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 40 4 Not Reported Permit 3

#### NM WELLS NM500000130360

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande Not Reported 2004-01-21T00:00:00.000Z Not Reported Not Reported Shallow 152 Not Reported Not Reported Not Reported 3 20 4.5 Not Reported Permit

#### 195 SSE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 79086 Not Reported 2003-01-22T00:00:00.000Z Not Reported 310 100 2003-01-24T00:00:00.000Z SAN./DOM. Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### NM WELLS NM500000107624

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 2003-01-22T00:00:00.000Z Not Reported Not Reported Shallow 69 Not Reported Not Reported Not Reported 3 200 4 Not Reported Permit 3

Map ID Direction

96 SW 4 - 1/2 Mile ower			NM WELLS	NM5000000336
Well Name:	Not Reported	POD Basin:	Rio Grande	
POD #:	65556	POD Suffix:	POD1	
Land Grant:	Not Reported	Drilling Started:	Not Reported	
Well Completed:	Not Reported	Plug Date:	Not Reported	
Completion Proved:	Not Reported	Elevation:	Not Reported	
Well Depth (ft):	90	Groundwater Source:	Shallow	
% Shallow:	100	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:	Not Reported	
Well Use:	Not Reported	Pump Type:	Not Reported	
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not Reported	
Aquifer:	Not Reported	Max Diversion Allowed:	Not Reported	
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Active	Casing Size:	4.5	
Pod Subbasin:	Middle Rio Grande	Well Tag:	Not Reported	
Static Level:	Not Reported	Water Right Status:	Permit	
Water Right Use:	DOM	Diversion Amt Allowed:	3	
197				

1/4 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 36635 Not Reported 1981-08-06T00:00:00.000Z Not Reported 75 100 1981-11-13T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:**

Rio Grande POD1 1981-08-06T00:00:00.000Z Not Reported Not Reported Shallow 29 Not Reported Not Reported Not Reported Not Reported 80 4.5 Not Reported Permit 3

# Z198 WNW 1/4 - 1/2 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 51334 Not Reported 2009-08-18T00:00:00.000Z Not Reported 49 100

#### NM WELLS NM500000153257

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD104 2009-08-18T00:00:00.000Z Not Reported 4946 Shallow 33

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AA199 South 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Active Middle Rio Grande Not Reported MON

Not Reported

Middle Rio Grande

Active

SAN

1988-12-08T00:00:00.000Z

1989-01-06T00:00:00.000Z

50182

260

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 0

#### NM WELLS NM500000005376

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1988-12-07T00:00:00.000Z Not Reported Not Reported Shallow 135 Not Reported Not Reported Not Reported 3 40 6.63 Not Reported Permit 3

#### 200 ENE 1/4 - 1/2 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 24408 Not Reported 1974-02-02T00:00:00.000Z Not Reported 295 100 1974-02-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM50000000240

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1974-01-24T00:00:00.000Z Not Reported Not Reported Shallow 155 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

#### 201 NNE

1/4 - 1/2 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Z202 NW 1/2 - 1 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

X203 NE 1/2 - 1 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 31366 Not Reported Not Reported Not Reported 0 100

Not Reported

Middle Rio Grande

Pending

DOM

35153

NA

0

0

Not Reported 64656 Not Reported 1996-08-06T00:00:00.000Z Not Reported 260 100 1996-08-29T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Database

EDR ID Number

NM WELLS NM500000018267

POD Basin: **Rio Grande** POD Suffix: POD1 1996-08-05T00:00:00.000Z Drilling Started: Plug Date: Not Reported Elevation: Not Reported Groundwater Source: Shallow Depth to Water: 78 Well Schedule Date: Not Reported Pump Type: Not Reported Discharge Pipe Size: Not Reported Max Diversion Allowed: Not Reported Est Yield (Gal/Min): 80 Casing Size: 4.5 Well Tag: Not Reported Water Right Status: Permit **Diversion Amt Allowed:** 3

#### NM WELLS NM500000171187

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD1 Not Reported 0 0 Not Reported Expired 0

#### NM WELLS NM500000009403

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### X204 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### Not Reported 45049 Not Reported 1986-08-16T00:00:00.000Z 1988-04-11T00:00:00.000Z 175 100 1988-07-13T00:00:00.000Z DAIRY Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported DAI

Not Reported

DOM

Middle Rio Grande

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 Not Reported Permit 3

#### NM WELLS NM500000023088

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported 1986-08-01T00:00:00.000Z Not Reported Not Reported Shallow 6 Not Reported SUBMER 1 1/4 83.2 0 0 Not Reported Permit 83.2

#### X205 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 17204 Not Reported 1970-02-03T00:00:00.000Z Not Reported 175 100 1970-03-20T00:00:00.000Z COMM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000025693

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1970-01-21T00:00:00.000Z Not Reported Not Reported Shallow 110 Not Reported Not Reported Not Reported Not Reported 0 6.63 Not Reported Permit 3

Map ID Direction Distance Elevation

#### AB206 West

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
  - 169 100 1988-02-03 Not Report Not Report Not Report Active Middle Rio Not Report DOM
- Not Reported 47371 Not Reported 1987-05-23T00:00:00.000Z Not Reported 169 100 1988-02-03T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### Database EDR ID Number

NM WELLS NM500000163933

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1987-05-22T00:00:00.000Z Not Reported Not Reported Shallow 23 Not Reported Not Reported Not Reported Not Reported 40 4.5 Not Reported Permit 3

#### AC207 SSW 1/2 - 1 Mile

Lower Well Name:

- POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 65200 Not Reported 1996-07-30T00:00:00.000Z Not Reported 195 100 1996-08-01T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

NM WELLS NM500000027756

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1996-07-30T00:00:00.000Z Not Reported Not Reported Shallow 65 Not Reported Not Reported Not Reported 3 50 4 Not Reported Permit 3

#### AA208 SSE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 86256 NON GRANT Not Reported Not Reported 0 100

## NM WELLS NM500000131005

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported Not Reported Not Reported Shallow 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AD209 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AE210 NNE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

Pending

IRR

00541

0

0

Active

DOM

1957-04-04T00:00:00.000Z

1957-04-24T00:00:00.000Z

00501

73

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported 3 0 0 Not Reported Permit 3

#### NM WELLS NM500000014906

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1957-04-04T00:00:00.000Z Not Reported Shallow 26 Not Reported Not Reported Not Reported Not Reported 0 3 Not Reported Permit

NM500000143371

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** S Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

3

NM WELLS

Map ID Direction Distance Elevation

#### Y211 WSW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 36264 NON 1981-06-03T00:00:00.000Z Not Reported 100 100 1981-06-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### Database EDR ID Number

NM WELLS NM500000011145

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1981-05-20T00:00:00.000Z Not Reported Not Reported Shallow 18 Not Reported Not Reported Not Reported Not Reported 40 6 Not Reported Permit 3

#### X212 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 65646 Not Reported 2000-11-16T00:00:00.000Z Not Reported 300 100 2000-11-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported Not Reported

# NM WELLS NM500000007914

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2000-11-15T00:00:00.000Z Not Reported Not Reported Shallow 165 Not Reported Not Reported Not Reported Not Reported 55 6.75 Not Reported Expired 0

#### AE213 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 00541 Not Reported 2007-10-17T00:00:00.000Z 2014-04-11T00:00:00.000Z 274 100

#### NM WELLS NM500000188422

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande BCPOD2 2007-10-16T00:00:00.000Z Not Reported Not Reported Shallow 106

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AF214 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 59302 NA 1994-04-20T00:00:00.000Z Not Reported 335 100 1994-04-29T00:00:00.000Z SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

2007-11-19T00:00:00.000Z

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

COM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 35 4.5 Not Reported Permit 20

#### NM WELLS NM500000213668

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1994-04-19T00:00:00.000Z Not Reported Not Reported Shallow 160 Not Reported Not Reported Not Reported 3 30 4 Not Reported Permit 3

#### AG215 NNW 1/2 - 1 Mile Lower

Epa region: Pwsid: Cityserved: Zipserved: Status: Pwssvcconn: Pwstype: Contact: Contactphone: Contactaddress2: Contactstate: Pwsactivitycode:

PWS ID: Address: City: Zip: Source code:

PWS ID: PWS name: 06 NM3520001 Not Reported Not Reported Active 16 CWS CHAVES, TOM 505-877-6309 4919 4th St SW NM A NM3520001 4919 FOURTH STREET SW ALBUQUERQUE 87105 Ground water

NM3520001 Not Reported

#### FRDS PWS NM3520001

State: Pwsname: Stateserved: Fipscounty: Retpopsrvd: Psource longname: Owner: Contactorgname: Contactorgname: Contactaddress1: Contactcity: Contactcity:

PWS name: Care of: State: Owner: Population:

PWS type: PWS address: NM TOMS MOBILE HOME PARK NM 35001 50 Groundwater Private CHAVES, TOM Not Reported ALBUQUERQUE 87105

TOM'S MOBILE HOME PARK Not Reported NM TOM'S MOBILE HOME PARK 45

Not Reported Not Reported

PWS city: PWS zip: PWS type code: Contact: Contact address: Contact state: Contact telephone: PWS ID: Date system activated: Retail population: System address: System city: System zip: Population served: Latitude: State: Latitude minutes: Longitude degrees: Longitude seconds: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State:

Not Reported Not Reported С CHAVES, TOM ALBUQUERQUE 87 Not Reported NM3520001 8105 00000045 Not Reported ALBUQUERQUE 87105 Under 101 Persons 350006 NM 59 106 50.0000 100 NM 7000 71 420 0 0 06/30/2002 104 NM 7000 71 420 Not Reported Not Reported Not Reported 33803 NM 3100 26 110 Not Reported Not Reported 05/31/2003 33903 NM 3100 24 110 Not Reported Not Reported 06/30/2003 34003 NM

PWS state: PWS name: Retail population served: Contact address: Contact city: Contact zip:

Activity status: Date system deactivated: System name: System address: System state:

Treatment:

Longitude:

Latitude degrees: Latitude seconds: Longitude minutes:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Not Reported TOMS MOBILE HOME PARK 50 4919 4th St SW NM 505-877-63

Active Not Reported TOM'S MOBILE HOME PARK 4919 FOURTH ST. SW NM

Untreated

1063952

34 56.0000 39

F 1999 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 10/19/1999

S 1999 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 10/19/1999

S 2003 Coliform (TCR) Monitoring, Repeat Minor (TCR) TCR Not Reported 05/01/2003

S 2003 Coliform (TCR) Monitoring, Routine Minor (TCR) TCR Not Reported 06/01/2003

S 2003

- Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:
- Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

System Name:

3100 05 110 Not Reported Not Reported 06/30/2003 34103 NM 3100 06 110 Not Reported Not Reported 06/30/2003 34205 NM 7000 71 420 Not Reported Not Reported Not Reported 34305 NM 5000 51 350 Not Reported Not Reported Not Reported

34311 NM 5000 51 350 Not Reported Not Reported Not Reported

TOM'S MOBILE HOME PARK

Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Violation Type:

Coliform (TCR) Notification, State TCR Not Reported 06/01/2003

S 2003 Coliform (TCR) Notification, Public TCR Not Reported 06/01/2003

S 2005 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 07/01/2005

S 2005 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 07/01/2005

S 2005 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 07/01/2005

S 1993 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 01/01/1993

S 2001 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 07/01/2001

71

Contaminant: Compliance End: Enforcement Date:

System Name: Contaminant: Compliance End: 7000 2015-12-31 2000-05-05

TOM'S MOBILE HOME PARK 7000 2015-12-31 2000-09-22

TOMS MOBILE HOME PARK 7000 2015-12-31 2000-09-22

TOM'S MOBILE HOME PARK 7000 2015-12-31 Not Reported

TOMS MOBILE HOME PARK 7000 2015-12-31 2000-09-22

TOMS MOBILE HOME PARK 7000 2015-12-31 2000-09-22

TOMS MOBILE HOME PARK 7000 10/16/2000 0:00:00 5/5/2000 0:00:00

TOMS MOBILE HOME PARK 7000 10/16/00 10/16/00

TOMS MOBILE HOME PARK 7000 10/16/00 09/22/00

TOMS MOBILE HOME PARK 7000 10/16/00 05/05/00

TOMS MOBILE HOME PARK 7000 10/16/2000 0:00:00 9/22/2000 0:00:00

TOMS MOBILE HOME PARK 7000 10/16/2000 0:00:00 10/16/2000 0:00:00

TOMS MOBILE HOME PARK 3100 05/31/03 Compliance Begin: Violation ID: Enforcement Action:

Violation Type: Compliance Begin: Violation ID: 1999-10-19 0000001 EFJ

71 1999-10-19 0000001 EFL

71 1999-10-19 0000001 EFL

71 1999-10-19 0000001 Not Reported

71 1999-10-19 0300338 EFL

71 1999-10-19 0300510 EFL

71 10/19/1999 0:00:00 104 EFJ

71 10/19/99 104 SOX

71 10/19/99 104 EFL

71 10/19/99 104 EFJ

71 10/19/1999 0:00:00 104 EFL

71 10/19/1999 0:00:00 104 SOX

26 05/01/03 33803

#### Enforcement Date:

System Name: Contaminant: Compliance End: Enforcement Date:

#### 07/14/03

TOMS MOBILE HOME PARK 3100 05/31/03 07/30/03

TOMS MOBILE HOME PARK 3100 5/31/2003 0:00:00 7/30/2003 0:00:00

TOMS MOBILE HOME PARK 3100 05/31/03 07/14/03

TOMS MOBILE HOME PARK 3100 5/31/2003 0:00:00 7/14/2003 0:00:00

TOMS MOBILE HOME PARK 3100 5/31/2003 0:00:00 7/14/2003 0:00:00

TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 8/6/2003 0:00:00

TOMS MOBILE HOME PARK 3100 06/30/03 08/06/03

TOMS MOBILE HOME PARK 3100 06/30/03 08/06/03

TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 8/6/2003 0:00:00

TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 No Enf Action as of

TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 4/12/2007 0:00:00

TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 No Enf Action as of Enforcement Action:

Violation Type: Compliance Begin: Violation ID: Enforcement Action: 26 05/01/03 33803 SIF

SIA

26 5/1/2003 0:00:00 33803 SIF

26 05/01/03 33803 SIE

26 5/1/2003 0:00:00 33803 SIA

26 5/1/2003 0:00:00 33803 SIE

24 6/1/2003 0:00:00 33903 SIA

24 06/01/03 33903 SIE

24 06/01/03 33903 SIA

24 6/1/2003 0:00:00 33903 SIE

5 6/1/2003 0:00:00 34003 10/17/2006 0:00:00

5 6/1/2003 0:00:00 34003 Not Reported

6 6/1/2003 0:00:00 34103 10/17/2006 0:00:00

System Name: Contaminant: Compliance End: Enforcement Date:

System Name: Contaminant: TOMS MOBILE HOME PARK 3100 6/30/2003 0:00:00 4/12/2007 0:00:00

TOMS MOBILE HOME PARK 7000 6/29/2006 0:00:00 6/29/2006 0:00:00

TOMS MOBILE HOME PARK 7000 06/29/06 06/29/06

TOMS MOBILE HOME PARK 7000 06/29/06 08/31/05

TOMS MOBILE HOME PARK 7000 6/29/2006 0:00:00 8/31/2005 0:00:00

TOMS MOBILE HOME PARK 5000 07/28/06 07/28/06

TOMS MOBILE HOME PARK 5000 07/28/06 07/18/05

TOMS MOBILE HOME PARK 5000 07/28/06 07/18/05

TOMS MOBILE HOME PARK 5000 12/31/2025 0:00:00 7/18/2005 0:00:00

TOMS MOBILE HOME PARK 5000 12/31/2025 0:00:00 7/18/2005 0:00:00

TOMS MOBILE HOME PARK 5000 12/31/2025 0:00:00 No Enf Action as of

TOMS MOBILE HOME PARK 5000 12/31/2025 0:00:00 4/12/2007 0:00:00

TOMS MOBILE HOME PARK 7000 Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Violation Type: Compliance Begin: 6 6/1/2003 0:00:00 34103 Not Reported

71 7/1/2005 0:00:00 34205 SOX

71 07/01/05 34205 SOX

71 07/01/05 34205 SII

71 7/1/2005 0:00:00 34205 SII

51 07/01/05 34305 SOX

51 07/01/05 34305 SIE

51 07/01/05 34305 SIA

51 7/1/2005 0:00:00 34305 SIE

51 7/1/2005 0:00:00 34305 SIA

51 1/1/1993 0:00:00 654793 10/17/2006 0:00:00

51 1/1/1993 0:00:00 654793 Not Reported

71 7/1/2001 0:00:00

Compliance End: Enforcement Date:

System Name: Contaminant: Compliance End: Enforcement Date:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category: 4/25/2002 0:00:00 4/12/2007 0:00:00

TOMS MOBILE HOME PARK 7000 4/25/2002 0:00:00 No Enf Action as of

100 2000 Fed Formal NOV issued

100 2000 Fed FAO issued

100 2002 Fed Compliance achieved

104 2001 St Compliance achieved

104 2000 Fed FAO issued

104 2000 Fed Formal NOV issued

33803 2003 St Compliance achieved

33803 2003 St Violation/Reminder Notice Informal

33803 2003 St Public Notif requested

33803 2003 St Public Notif received

33803 2003 St Compliance achieved

33903 2003 St Public Notif requested

33903 2003 St Violation/Reminder Notice Informal

Violation ID: Enforcement Action:

Violation Type: Compliance Begin: Violation ID: Enforcement Action:

Orig Code: **Enforcement Action:** Enforcement Category:

Orig Code: **Enforcement Action:** Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: **Enforcement Action:** Enforcement Category:

Orig Code: **Enforcement Action:** Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: 74701 Not Reported

71 7/1/2001 0:00:00 74701 10/17/2006 0:00:00

F 05/05/2000 Informal

F 09/22/2000 Formal

F 06/30/2002 Resolving

S 10/16/2000 Resolving

F 09/22/2000 Formal

F 05/05/2000 Informal

S 05/31/2003 Resolving

S 07/14/2003

07/14/2003 Informal

S

S 07/30/2003 Informal

S 05/31/2003 Resolving

S 08/06/2003 Informal

S 08/06/2003

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: 33903 2003 St Compliance achieved

33903 2003 St Compliance achieved

34003 2003 St Compliance achieved

34003 2003 St Compliance achieved

34103 2003 St Compliance achieved

34103 2003 St Compliance achieved

34205 2006 St Compliance achieved

34205 2005 State CCR Follow-up Notice Informal

34305 2005 St Violation/Reminder Notice Informal

34305 2006 St Compliance achieved

34305 2005 St Public Notif requested

34311 2005 St Violation/Reminder Notice Informal

34311 2006 St Compliance achieved

654793 2003 Fed Compliance achieved

74701 2006 Fed Compliance achieved Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category: S 06/30/2003 Resolving

S 06/29/2006 Resolving

S 08/31/2005

S 07/18/2005

S 07/28/2006 Resolving

S 07/18/2005 Informal

S 07/18/2005

S 05/18/2006 Resolving

. 11/19/2002 Resolving

F 06/29/2006 Resolving

F

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name:

Not Reported 2004 St Public Notif requested

Not Reported 2002 St Violation/Reminder Notice Not Reported

Not Reported 2004 St Violation/Reminder Notice Not Reported

Not Reported 2004 St Violation/Reminder Notice Not Reported

Not Reported 2003 Fed Compliance achieved

Not Reported 2001 St Compliance achieved

Not Reported 2002 St Compliance achieved

Not Reported 2003 St Violation/Reminder Notice Not Reported

Not Reported 2002 St Tech Assistance Visit

TOMS MOBILE HOME PARK C 7000 10/19/1999 0:00:00 10/16/2000 0:00:00 Not Reported

TOMS MOBILE HOME PARK C 7000 10/19/1999 0:00:00 5/5/2000 0:00:00 Not Reported

TOMS MOBILE HOME PARK C 7000 10/19/1999 0:00:00 9/22/2000 0:00:00 Not Reported

TOMS MOBILE HOME PARK

Orig Code: Enforcement Action: Enforcement Category: Orig Code:

Enforcement Action:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served:

04/12/2004 Not Reported

S

S 04/17/2002

S 10/31/2003

S 10/31/2003

F 11/19/2002 Not Reported

S 10/16/2000 Not Reported

S 04/25/2002 Not Reported

S 02/11/2003

S 04/22/2002 Not Reported

50 104 71 10/16/2000 0:00:00 State Compliance Achieved

50 104 71 10/16/2000 0:00:00 Fed Formal NOV Issued

50 104 71 10/16/2000 0:00:00 Fed FAO Issued

50

PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Violation ID: Violation type: Compliance end date: Enforcement action: C COLIFORM (TCR) 5/1/2003 0:00:00 7/14/2003 0:00:00 Not Reported

TOMS MOBILE HOME PARK C COLIFORM (TCR) 5/1/2003 0:00:00 7/14/2003 0:00:00 Not Reported

TOMS MOBILE HOME PARK C COLIFORM (TCR) 5/1/2003 0:00:00 7/30/2003 0:00:00 Not Reported

TOMS MOBILE HOME PARK C COLIFORM (TCR) 6/1/2003 0:00:00 8/6/2003 0:00:00 Not Reported

TOMS MOBILE HOME PARK C COLIFORM (TCR) 6/1/2003 0:00:00 8/6/2003 0:00:00 Not Reported

TOMS MOBILE HOME PARK

C COLIFORM (TCR) 6/1/2003 0:00:00 No Enf Action as of Not Reported

TOMS MOBILE HOME PARK C COLIFORM (TCR) 6/1/2003 0:00:00 No Enf Action as of

Not Reported

TOMS MOBILE HOME PARK C 7000 7/1/2005 0:00:00 6/29/2006 0:00:00 Not Reported

TOMS MOBILE HOME PARK C 34205 71 6/29/2006 0:00:00 SII Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

## Population served:

Contaminant: Compliance start date: Enforcement date: Violation measurement: 33803 Monitoring, Repeat Minor (TCR) 5/31/2003 0:00:00 State Violation/Reminder Notice

50 33803 Monitoring, Repeat Minor (TCR) 5/31/2003 0:00:00 State Public Notif Requested

50 33803 Monitoring, Repeat Minor (TCR) 5/31/2003 0:00:00 State Public Notif Received

50 33903 Monitoring, Routine Minor (TCR) 6/30/2003 0:00:00 State Violation/Reminder Notice

50 33903 Monitoring, Routine Minor (TCR) 6/30/2003 0:00:00 State Public Notif Requested

50 34003 5 6/30/2003 0:00:00 7/8/2009 0:00:00

50 34103 6 6/30/2003 0:00:00 7/8/2009 0:00:00

50 34205 71 6/29/2006 0:00:00 State Compliance Achieved

## 50

7000 7/1/2005 0:00:00 8/31/2005 0:00:00 Not Reported

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS name: PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

# TOMS MOBILE HOME PARK

LEAD & COPPER RULE 7/1/2005 0:00:00 7/18/2005 0:00:00 Not Reported

TOMS MOBILE HOME PARK C LEAD & COPPER RULE 7/1/2005 0:00:00 7/18/2005 0:00:00 Not Reported

TOMS MOBILE HOME PARK C

LEAD & COPPER RULE 7/1/2005 0:00:00 7/28/2006 0:00:00 Not Reported

TOMS MOBILE HOME PARK C LEAD & COPPER RULE 1/1/1993 0:00:00 11/19/2002 0:00:00 0

TOMS MOBILE HOME PARK C 7000 7/1/2001 0:00:00 6/29/2006 0:00:00 0 Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

Population served: Violation ID: Violation type: Compliance end date: Enforcement action: 50 34305 Initial Tap Sampling for Pb and Cu 7/28/2006 0:00:00 State Violation/Reminder Notice

50 34305 Initial Tap Sampling for Pb and Cu 7/28/2006 0:00:00 State Public Notif Requested

50 34305 Initial Tap Sampling for Pb and Cu 7/28/2006 0:00:00 State Compliance Achieved

50 654793 Initial Tap Sampling for Pb and Cu 11/19/2002 0:00:00 Fed Compliance Achieved

50 74701 71 4/25/2002 0:00:00 Fed Compliance Achieved

#### AH216 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 43623 Not Reported 1985-05-06T00:00:00.000Z Not Reported 127 100 1985-08-12T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000197422

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1985-05-01T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported Not Reported 20 5 Not Reported Permit 3

Map ID Direction Distance Elevation

#### AF217 ENE

## 1/2 - 1 Mile Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AG218

NNW 1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 35800 NON 1981-03-22T00:00:00.000Z Not Reported 132 100 1981-05-20T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN
- Not Reported 65647 Not Reported 2000-11-16T00:00:00.000Z Not Reported 300 100 2000-11-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported Not Reported

Database EDR

EDR ID Number

NM WELLS NM50000007824

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 0

Rio Grande POD1 2000-11-15T00:00:00.000Z Not Reported Not Reported Shallow 165 Not Reported Not Reported Not Reported Not Reported 55 6.75 Not Reported Permit

## NM WELLS NM500000020060

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1981-03-22T00:00:00.000Z Not Reported Not Reported Shallow 49 Not Reported Not Reported Not Reported 3 50 4.5 Not Reported Permit 3

#### AC219 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 67340 Not Reported 1997-12-18T00:00:00.000Z Not Reported 442 100

## NM WELLS NM500000014389

Not Reported

Shallow

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1997-12-15T00:00:00.000Z Not Reported

58

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AF220 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AH221 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 43624 Not Reported 1985-05-10T00:00:00.000Z Not Reported 116 100 1985-08-12T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

1998-01-21T00:00:00.000Z 5A Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

65648

250

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 100 4.5 Not Reported Permit 3

## NM WELLS NM500000213672

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Expired ٥

## NM WELLS NM500000014631

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1985-05-07T00:00:00.000Z Not Reported Not Reported Shallow 54 Not Reported Not Reported Not Reported Not Reported 20 5 Not Reported Permit 3

Map ID Direction Distance Elevation

#### 222 SSE 1/2 - 1 Mile

## Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### Al223 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AB224 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 64343 Not Reported 1996-05-01T00:00:00.000Z Not Reported 220 100

## Not Reported 06415 Not Reported 1961-10-09T00:00:00.000Z Not Reported 244 100 1962-02-14T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported STK

Not Reported

Middle Rio Grande

Inactive

SUB

00541

0

100

## POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:

Water Right Status:

**Diversion Amt Allowed:** 

## **Rio Grande** Not Reported 1961-09-14T00:00:00.000Z Not Reported Not Reported Shallow 119 Not Reported Not Reported Not Reported 6.45 0 0 Not Reported Licensed 6.45

EDR ID Number

NM500000024381

Database

NM WELLS

## NM WELLS NM500000143372

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** S2 Not Reported Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

## NM WELLS NM500000215194

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1996-05-01T00:00:00.000Z Not Reported Not Reported Shallow 26

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AF225 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## 1996-08-06T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

2000-11-16T00:00:00.000Z

2000-11-28T00:00:00.000Z

65649

300

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 80 4.5 Not Reported Permit 3

## NM WELLS NM500000011486

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 2000-11-15T00:00:00.000Z Not Reported Not Reported Shallow 165 Not Reported Not Reported Not Reported Not Reported 55 6.75 Not Reported Permit ٥

#### AD226 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 53903 Not Reported 1991-07-24T00:00:00.000Z Not Reported 85 100 1992-02-20T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000001275

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1991-07-22T00:00:00.000Z Not Reported Not Reported Shallow 15 Not Reported Not Reported Not Reported Not Reported 40 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

# 227 NW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AD228 WNW 1/2 - 1 Mile

Lower Well Name: POD #:

- Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 46278 Not Reported 1986-08-26T00:00:00.000Z Not Reported 80 100 1986-11-18T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

2013-03-08T00:00:00.000Z Not Reported 2013-03-19T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported

Not Reported

23600

NON

170

100

Active

DOM

#### Database EDR ID Number

NM WELLS NM500000171274

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD2 2013-03-07T00:00:00.000Z Not Reported Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 30 4 Not Reported Permit 3

#### NM WELLS NM500000173046

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1986-08-26T00:00:00.000Z Not Reported Not Reported Shallow 20 Not Reported Not Reported Not Reported Not Reported 25 5 Not Reported Permit 3

## AJ229 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 47370 NA 1994-02-06T00:00:00.000Z Not Reported 85 100

#### **NM WELLS** NM500000003986

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

**Rio Grande** POD2 1994-02-05T00:00:00.000Z Not Reported Not Reported Shallow 20

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AJ230 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1994-02-14T00:00:00.000Z DOM 1HH Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported CLS

Not Reported

Not Reported

DOM 1HH

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

1987-04-18T00:00:00.000Z

1988-03-11T00:00:00.000Z

47370

NA

85

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported 3 25 6.5 Not Reported Closed File 0

## NM WELLS NM500000011638

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 1987-04-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported 3 25 6.5 Not Reported Permit

#### Al231 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 85093 NON GRANT 2007-08-07T00:00:00.000Z Not Reported 340 100 2007-08-09T00:00:00.000Z 1HH Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

## NM WELLS NM500000133908

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2007-08-02T00:00:00.000Z Not Reported Not Reported Shallow 170 Not Reported Not Reported Not Reported Not Reported 22 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

### AJ232 WNW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 61926 Not Reported 1995-05-19T00:00:00.000Z Not Reported 85 100 1995-05-25T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000007789

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1995-05-19T00:00:00.000Z Not Reported Not Reported Shallow 20 Not Reported Not Reported Not Reported Not Reported 10 4.5 Not Reported Permit 3

#### AK233 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 42893 NON 1985-01-11T00:00:00.000Z Not Reported 195 100 1985-01-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000016630

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1985-01-10T00:00:00.000Z Not Reported Not Reported Shallow 76 Not Reported Not Reported Not Reported Not Reported 75 4.5 Not Reported Permit 3

#### AJ234 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 45255 Not Reported 1986-03-11T00:00:00.000Z Not Reported 80 100

## NM WELLS NM500000170474

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1986-03-11T00:00:00.000Z Not Reported Not Reported Shallow 15

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AL235 South 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1986-04-29T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1996-07-29T00:00:00.000Z

1996-08-01T00:00:00.000Z

65201

180

100

SAN

Active

SAN

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 45 5 Not Reported Permit 3

## NM WELLS NM500000005538

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 1996-07-20T00:00:00.000Z Not Reported Shallow 50 Not Reported Not Reported Not Reported 3 50 4 Not Reported Permit

#### AM236 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 90817 Not Reported 1897-12-31T00:00:00.000Z Not Reported 90 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported NOT

## NM WELLS NM500000143396

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 20 Not Reported Not Reported Not Reported Not Reported 25 5 Not Reported Declaration 0

Map ID Direction Distance Elevation

Distance Elevation			Database	EDR ID Number
AN237 ENE I/2 - 1 Mile Higher			NM WELLS	NM5000000123899
Well Name:	Not Reported	POD Basin:	Rio G	Grande
POD #:	85093	POD Suffix:	Not F	Reported
Land Grant:	NON-GRANT	Drilling Started:	Not F	Reported
Well Completed:	Not Reported	Plug Date:		Reported
Completion Proved:	Not Reported	Elevation:	Not F	Reported
Well Depth (ft):	300	Groundwater Source:	Not F	Reported
% Shallow:	0	Depth to Water:	0	•
OSE Filing Date:	Not Reported	Well Schedule Date:	Not F	Reported
Well Use:	Not Reported	Pump Type:	Not F	Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not Reported	
Aquifer:	Not Reported	Max Diversion Allowed:	Not Reported	
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Pending	Casing Size:	4.5	
Pod Subbasin:	Not Reported	Well Tag:	Not Reported	
Static Level:	Not Reported	Water Right Status:	Permit	
Water Right Use:	DOM	Diversion Amt Allowed:	3	
AN238 ENE I/2 - 1 Mile Higher			NM WELLS	 NM500000000123
Well Name:	Not Reported	POD Basin:	Rio C	Grande
POD #:	59301	POD Suffix:	POD	
Land Grant:	NA	Drilling Started:	1994	-04-20T00:00:00.000Z
Well Completed:	1994-04-20T00:00:00.000Z	Plug Date:	Not F	Reported
Completion Proved:	Not Reported	Elevation:	Not F	Reported
Well Depth (ft):	300	Groundwater Source:	Shall	ow
% Shallow:	100	Depth to Water:	150	
OSE Filing Date:	1994-04-29T00:00:00.000Z	Well Schedule Date:	Not F	Reported
Well Use:	SAN	Pump Type:	Not F	Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not F	Reported
Aquifer:	Not Reported	Max Diversion Allowed:	3	
0 ( ) ) ( )				

### AM239 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Surface Water Diversion:

POD Status:

Static Level:

Pod Subbasin:

Water Right Use:

Not Reported 51487 Not Reported 1990-05-25T00:00:00.000Z Not Reported 50

Not Reported

Not Reported

Middle Rio Grande

Active

SAN

100

# NM WELLS NM500000024583

40

4

3

Permit

Not Reported

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Est Yield (Gal/Min):

Water Right Status:

Diversion Amt Allowed:

Casing Size:

Well Tag:

Rio Grande POD1 1990-05-21T00:00:00.000Z Not Reported Not Reported Shallow 14

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 240 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2009-08-18T00:00:00.000Z Not Reported 65 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

1990-10-03T00:00:00.000Z

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 2 Not Reported Permit 3

## NM WELLS NM500000153258

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande POD105 2009-08-18T00:00:00.000Z Not Reported 4946 Shallow 50 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit

#### AO241 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 78060 PAJARITO Not Reported Not Reported 200 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Not Reported Not Reported DOM

## NM WELLS NM500000105828

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Expired 0

Map ID Direction Distance Elevation

# 242 NNW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AL243 SSW 1/2 - 1 Mile Lower
  - Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 77181 Not Reported 2002-06-03T00:00:00.000Z Not Reported 270 100 2002-06-10T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

03616

47

100

DOM

Active

DOM

POD Basin: POD Suffix: Drilling Started: 1959-07-28T00:00:00.000Z Plug Date: Elevation: Groundwater Source: Depth to Water: 1959-08-05T00:00:00.000Z Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

#### Database EDR ID Number

NM WELLS NM500000033424

> **Rio Grande** Not Reported 1959-07-28T00:00:00.000Z Not Reported Not Reported Shallow 9 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### NM WELLS NM500000103702

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 2002-05-28T00:00:00.000Z Not Reported Not Reported Shallow 49 Not Reported Not Reported Not Reported Not Reported 30 4.5 Not Reported Permit 3

## AP244 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 03616 Not Reported 1962-03-22T00:00:00.000Z Not Reported 170 100

#### **NM WELLS** NM500000000453

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

**Rio Grande** CI W 1962-03-17T00:00:00.000Z Not Reported Not Reported Shallow

41

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AP245 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1962-06-25T00:00:00.000Z SCHOOL Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported SCH

Not Reported

Not Reported

Not Reported

ABANDONED

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

SCH

Middle Rio Grande

1959-07-23T00:00:00.000Z

1959-07-27T00:00:00.000Z

03610

81

100

- Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:
- Not Reported Not Reported Not Reported 0 0 Not Reported Permit 7

### NM WELLS NM500000026933

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande REPAIR 1959-07-22T00:00:00.000Z Not Reported Shallow 45 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit

#### 246 South 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 76901 Not Reported 2001-12-30T00:00:00.000Z Not Reported 255 100 2002-01-07T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### NM WELLS NM500000110545

7

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande Not Reported 2001-12-27T00:00:00.000Z Not Reported Not Reported Shallow 102 Not Reported Not Reported Not Reported 3 10 4.5 Not Reported Permit 3

Map ID Direction Distance Elevation

### AL247 SSW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 61719 Not Reported 1995-04-21T00:00:00.000Z Not Reported 265 100 1995-05-01T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

### Database EDR ID Number

NM WELLS NM500000022273

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1995-04-13T00:00:00.000Z Not Reported Not Reported Shallow 70 Not Reported Not Reported Not Reported Not Reported 10 4.5 Not Reported Permit 3

#### AK248 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 47834 Not Reported 1987-08-18T00:00:00.000Z Not Reported 189 100 1987-08-25T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000165716

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1987-08-18T00:00:00.000Z Not Reported Not Reported Shallow 60 Not Reported Not Reported Not Reported Not Reported 30 4 Not Reported Permit 3

249 East 1/2 - 1 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 39799 Not Reported 1983-05-11T00:00:00.000Z Not Reported 216 100

## NM WELLS NM500000002599

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1983-05-11T00:00:00.000Z Not Reported Not Reported Shallow 125

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AQ250 NNE 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AQ251 NNE 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 42603 Not Reported 1984-09-27T00:00:00.000Z Not Reported 165 100 1984-11-20T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## 1983-05-18T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

Pending

SAN

73634

200

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 60 4.5 Not Reported Permit 3

### NM WELLS NM500000093267

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 5 Not Reported Expired ٥

## NM WELLS NM50000006304

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1984-09-25T00:00:00.000Z Not Reported Not Reported Shallow 73 Not Reported Not Reported Not Reported Not Reported 0 5 Not Reported Permit 3

Direction Distance Elevation			Database	EDR ID Number
AK252			Datababb	
			NM WELLS	NM5000000219256
1/2 - 1 Mile Higher				
Well Name:	Not Reported	POD Basin:	Rio G	Grande
POD #:	91860	POD Suffix:	POD	
Land Grant:	NON	Drilling Started:		Reported
Well Completed:	Not Reported	Plug Date:		Reported
Completion Proved:	Not Reported	Elevation:		Reported
Well Depth (ft):	0	Groundwater Source:	Not F	Reported
% Shallow:	0	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:		Reported
Well Use:	Not Reported	Pump Type:		Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:		Reported
Aquifer:	Not Reported	Max Diversion Allowed:		Reported
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Not Reported Middle Rio Grande	Casing Size:	0	) e u e ute el
Pod Subbasin:		Well Tag: Water Dight Status		Reported
Static Level: Water Right Use:	Not Reported SAN	Water Right Status: Diversion Amt Allowed:	Perm 1	IL
AK253 NE 1/2 - 1 Mile Higher			NM WELLS	NM500000166234
Well Name:	Not Reported	POD Basin:	Rio G	Grande
POD #:	42096	POD Suffix:	POD	1
Land Grant:	Not Reported	Drilling Started:	Not F	Reported
Well Completed:	Not Reported	Plug Date:	Not F	Reported
Completion Proved:	Not Reported	Elevation:		Reported
Well Depth (ft):	110	Groundwater Source:	Shall	ow
% Shallow:	100	Depth to Water:	72	
OSE Filing Date:	1984-08-15T00:00:00.000Z	Well Schedule Date:		Reported
Well Use:	Not Reported	Pump Type:	Not Reported	
Pump Serial #:	Not Reported	Discharge Pipe Size: Max Diversion Allowed:	Not Reported	
Aquifer: Surface Water Diversion:	Not Reported			
POD Status:	Not Reported Pending	Est Yield (Gal/Min): Casing Size:	60 6.63	
Pod Subbasin:	Middle Rio Grande	Well Tag:		enorted
Static Level:	Not Reported	Water Right Status:	Not Reported Permit	
Water Right Use:	DOM	Diversion Amt Allowed:		
254 West 1/2 - 1 Mile			NM WELLS	NM500000146892
Lower				
Well Name:	Not Reported	POD Basin:	Rio G	Grande
	91492	POD Suffix	POD	1

POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: NOT Reported 91492 NON GRANT 2009-07-02T00:00:00.000Z Not Reported 100 100 POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 2009-07-02T00:00:00.000Z Not Reported Not Reported Shallow 25

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 255 WSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## Not Reported 54362 Not Reported 1991-10-03T00:00:00.000Z Not Reported 50 100 1992-08-25T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

2009-07-20T00:00:00.000Z

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 50 4 Not Reported Permit 1

## NM WELLS NM500000033320

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 1991-09-30T00:00:00.000Z Not Reported Not Reported Shallow 19 Not Reported Not Reported Not Reported Not Reported 10 2.38 Not Reported Permit

#### AR256 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 31573 Not Reported Not Reported Not Reported 0 100 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported SAN

## NM WELLS NM500000013415

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 7 Not Reported Permit 3

Map ID Direction Distance Elevation

# 257 NE

## 1/2 - 1 Mile Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AS258 South 1/2 - 1 Mile

Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- 64219 Not Reported 1996-04-10T00:00:00.000Z Not Reported 160 100 1996-04-12T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

Active

SAN

1996-01-04T00:00:00.000Z

1996-01-08T00:00:00.000Z

63526

280

100

- Not Reported
- Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:**

POD Basin:

POD Suffix:

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

**Discharge Pipe Size:** 

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Drilling Started:

**Rio Grande** POD1 1996-01-03T00:00:00.000Z Not Reported Not Reported Shallow 110 Not Reported Not Reported Not Reported Not Reported 40 4 Not Reported Permit 3

EDR ID Number

NM500000181802

Database

NM WELLS

#### NM WELLS NM500000029239

**Rio Grande** POD1 1996-04-10T00:00:00.000Z Not Reported Not Reported Shallow 70 Not Reported Not Reported Not Reported Not Reported 40 4 Not Reported Permit 3

AT259 ENE 1/2 - 1 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 20377 Not Reported 1972-08-31T00:00:00.000Z Not Reported 184 100

#### **NM WELLS** NM500000053177

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 1972-08-05T00:00:00.000Z Not Reported Not Reported Shallow 105

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## AT260 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## AT261 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 20377 Not Reported 1990-09-14T00:00:00.000Z Not Reported 183 100 1990-09-25T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

1972-11-16T00:00:00.000Z Middle Rio Grande

Not Reported

SAN

Middle Rio Grande

90247

NON

0

0

Active

DOM

Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

#### NM WELLS NM500000050819

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 7 Not Reported Permit 1

#### NM WELLS NM500000053189

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD2 1990-09-14T00:00:00.000Z Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported Not Reported 15 4 Not Reported Permit 3

Map ID Direction Distance Elevation

#### AO262 SSW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AS263 South 1/2 - 1 Mile

Lower Well Name: POD #: Land Grant: Well Completed: Completion Prov Well Depth (ft): % Shallow: OSE Filing Date: Well Use:

Vell Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

AU264 WSW 1/2 - 1 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 92178 Not Reported 2016-06-22T00:00:00.000Z Not Reported 281 100

Not Reported 64780 Not Reported 1996-08-16T00:00:00.000Z Not Reported 85 100 1996-12-16T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

Capped

DOL

24090

340

100

### Database ED

EDR ID Number

1996-08-16T00:00:00.000Z

NM WELLS NM500000169346

POD1

**Rio Grande** 

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Shallow

0

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

40 4 Not Reported Permit 3

### NM WELLS NM500000029307

**Rio Grande** 

POD1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

## NM WELLS NM500000202893

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD2 2016-06-20T00:00:00.000Z Not Reported Not Reported Shallow 24

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 265 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## 2016-07-01T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1962-03-22T00:00:00.000Z

1962-06-25T00:00:00.000Z

03610

170

100

DOM

Active

SCH

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 30 4 Not Reported Permit 1

## NM WELLS NM500000110509

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1962-03-17T00:00:00.000Z Not Reported Not Reported Shallow 41 Not Reported Not Reported Not Reported Not Reported 0 16 Not Reported Permit

#### AR266 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 93591 NON GRANT 2012-12-18T00:00:00.000Z Not Reported 198 100 2012-12-27T00:00:00.000Z DRINKING/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000148597

7

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2012-12-17T00:00:00.000Z Not Reported Not Reported Shallow 58 Not Reported Not Reported Not Reported Not Reported 30 4 Not Reported Permit 1

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Map ID Direction Distance Elevation

### AU267 SW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 92178 NON GRANT 2010-06-29T00:00:00.000Z Not Reported 285 100 2010-08-04T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### Database EDR ID Number

NM WELLS NM500000202892

> **Rio Grande** POD1 2010-06-29T00:00:00.000Z Not Reported Not Reported Shallow 15 Not Reported Not Reported

# 1

Not Reported

Not Reported

Not Reported

55

Permit

4

### AV268 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 07909 Not Reported 1950-08-01T00:00:00.000Z Not Reported 120 100 Not Reported DOM,SAN Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported IND

#### NM WELLS NM500000001416

**Rio Grande** 

POD1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 2.5

## AW269 SW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 00119 Not Reported 1958-01-28T00:00:00.000Z Not Reported 0 100

#### **NM WELLS** NM500000021822

Shallow

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande Not Reported 1958-01-28T00:00:00.000Z Not Reported Not Reported

0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AW270 SW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Lso:

% Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use: 1958-01-30T00:00:00.000Z Not Reported Not Reported Not Reported Active Not Reported Not Reported Not Reported DOM

Not Reported

Not Reported

IRRIGATION

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

IRR

1964-06-03T00:00:00.000Z

1964-12-21T00:00:00.000Z

1965-01-11T00:00:00.000Z

00118

447

n

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 7 Not Reported Permit 3

## NM WELLS NM500000128577

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** S-2 1964-05-18T00:00:00.000Z Not Reported Not Reported Artesian 58 Not Reported TURBIN Not Reported Not Reported 1350 16 Not Reported Permit ٥

#### AX271 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 73244 Not Reported 2000-01-17T00:00:00.000Z Not Reported 130 100 2000-02-18T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000086628

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 2000-01-14T00:00:00.000Z Not Reported Not Reported Shallow 20 Not Reported Not Reported Not Reported 3 200 4.5 Not Reported Permit 3

POD Basin:

POD Suffix:

Drilling Started:

Map ID Direction Distance Elevation

## AY272 SSW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- AY273 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 59804 Not Reported 1994-08-16T00:00:00.000Z Not Reported 65 100 1994-09-26T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Not Reported

18122

55

100

DOM

Active

DOM

- 1972-07-09T00:00:00.000Z Plug Date: Not Reported Elevation: Depth to Water: 1972-08-07T00:00:00.000Z Pump Type: Not Reported Not Reported Not Reported Est Yield (Gal/Min): Casing Size: Middle Rio Grande Well Tag: Not Reported Water Right Status:
- Database

EDR ID Number

NM WELLS NM500000000060

**Rio Grande** Not Reported 1971-06-01T00:00:00.000Z Not Reported Not Reported Groundwater Source: Shallow 18 Well Schedule Date: Not Reported Not Reported Discharge Pipe Size: Not Reported Max Diversion Allowed: Not Reported 0 1.5 Not Reported Permit **Diversion Amt Allowed:** 3

#### NM WELLS NM500000001371

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1994-08-16T00:00:00.000Z Not Reported Not Reported Shallow 16 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 3

AZ274 SSW 1/2 - 1 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 47861 Not Reported 1987-07-04T00:00:00.000Z Not Reported 380 100

#### **NM WELLS** NM500000165806

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 1987-06-29T00:00:00.000Z Not Reported Not Reported Shallow 70

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### AX275 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1987-08-24T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Middle Rio Grande

Active

DOM

1987-09-14T00:00:00.000Z

1987-10-01T00:00:00.000Z

48285

147

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 200 6 Not Reported Permit 3

## NM WELLS NM500000033367

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

### **Rio Grande** POD1 1987-09-14T00:00:00.000Z Not Reported Not Reported Shallow 19 Not Reported Not Reported Not Reported Not Reported 70 4 Not Reported Permit 3

#### 276 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 17290 Not Reported 1970-03-04T00:00:00.000Z Not Reported 190 100 1970-03-20T00:00:00.000Z COMM/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000023407

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1970-02-20T00:00:00.000Z Not Reported Not Reported Shallow 90 Not Reported Not Reported Not Reported Not Reported 0 6.63 Not Reported Permit 3

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Map ID Direction Distance Elevation

## AZ277 SSW

## 1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 67973 Not Reported 1997-09-05T00:00:00.000Z Not Reported 303 100 1997-11-24T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### Database EDR

EDR ID Number

NM WELLS NM500000036446

Rio Grande Not Reported 1997-09-03T00:00:00.000Z Not Reported Not Reported Shallow 69 Not Reported Not Reported Not Reported 3 20 6.63 Not Reported Permit

#### AV278 NNE 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 93672 NON 2012-11-13T00:00:00.000Z Not Reported 215 100 2012-11-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000161262

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande POD1 2012-11-08T00:00:00.000Z Not Reported Not Reported Shallow 56 Not Reported Not Reported Not Reported 1 20 4 Not Reported Permit

#### AV279 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 95142 NON 2015-03-13T00:00:00.000Z Not Reported 370 100

## NM WELLS NM500000190689

1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 2015-03-13T00:00:00.000Z Not Reported Not Reported Shallow 60

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 280 NNW 1/2 - 1 Mile Lower

Epa region: Pwsid: Cityserved: Zipserved: Status: Pwssvcconn: Pwstype: Contact: Contactphone: Contactaddress2: Contactstate: Pwsactivitycode:

PWS ID: Address: City: Zip: Source code:

PWS ID: PWS name: PWS city: PWS zip: PWS type code: Contact: Contact address: Contact state: Contact telephone:

PWS ID: Date system activated: Retail population: System address: System city: System zip:

Population served:

Latitude:

State: Latitude minutes: Longitude degrees: Longitude seconds: 2015-07-24T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

06

Active

CWS

NM

87105

С

87

7706

87105

350013

NM

106

45.0000

0

Α

31

NM3550001

Not Reported

Not Reported

CHAVES, TOM

505-877-6309

NM3550001

Ground water

NM3550001

Not Reported

Not Reported

Not Reported

CHAVES, TOM

Not Reported

NM3550001

00000090

Not Reported

ALBUQUERQUE

Under 101 Persons

ALBUQUERQUE

ALBUQUERQUE

4919 FOURTH STREET SW

4919 4th St SW

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 50 4 Not Reported Permit 1

## FRDS PWS NM3550001

State: Pwsname: Stateserved: Fipscounty: Retpopsrvd: Psource longname: Owner: Contactorgname: Contactorgname: Contactoddress1: Contactcity: Contactzip:

PWS name: Care of: State: Owner: Population:

PWS type: PWS address: PWS state: PWS name: Retail population served: Contact address: Contact city: Contact zip:

Activity status: Date system deactivated: System name: System address: System state:

Treatment:

Longitude:

Latitude degrees: Latitude seconds: Longitude minutes: NM MOUNTAIN VIEW MOBILE HOME PARK NM 35001 90 Groundwater Private CHAVES, TOM Not Reported ALBUQUERQUE 87105

MOUNTAIN VIEW MOBILE HOME PARK Not Reported NM MOUNTAIN VIEW MOBILE HOME PARK 90

Not Reported Not Reported Not Reported MOUNTAIN VIEW MOBILE HOME PARK 90 4919 4th St SW NM 505-877-63

Active Not Reported MOUNTAIN VIEW TRAILER PARK 4919 FOURTH STREET S.W. NM

Untreated

1063945

35 12.0000 39

- Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:
- Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

104 NM 7000 71 420 Not Reported Not Reported Not Reported 155493 NM 5000 51 350 Not Reported Not Reported Not Reported 155503 NM 3100 05 110 Not Reported Not Reported 06/30/2003 155603 NM 3100 06 110 Not Reported Not Reported 06/30/2003 155705 NM 7000 71 420 Not Reported Not Reported Not Reported 155806 NM 5000 51 350 Not Reported Not Reported Not Reported 155809 NM 7500 75 410 Not Reported Not Reported

Not Reported

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt: S 1999 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 10/19/1999

S 1993 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 01/01/1993

S 2003 Coliform (TCR) Notification, State TCR Not Reported 06/01/2003

S 2003 Coliform (TCR) Notification, Public TCR Not Reported 06/01/2003

S 2005 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 07/01/2005

S 2005 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 01/01/2005

S 2007 Public Notice PN Violation for NPDWR Violation PN rule Not Reported 04/26/2007

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt: Violation id: State: Contamination code:

Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

Violation id: State: Contamination code: Violation code: Rule code: Violation measur: State mcl: Cmp edt:

155810 NM 5000 51 350 Not Reported Not Reported Not Reported 155811 NM 5000 51 350 Not Reported Not Reported Not Reported 1V00 NM 7000 71 420 0 0 07/11/2002 32803 NM 3100 26 110 Not Reported Not Reported 05/31/2003 32903 NM 3100 24 110 Not Reported Not Reported 06/30/2003 654393 NM 5000 51 350 0 0 Not Reported 74501 NM 7000 71 420 0

0

04/25/2002

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt:

Orig code: Violation Year: Contamination Name: Violation name: Rule name: Unit of measure: Cmp bdt: S 2005 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 07/01/2005

S 2006 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 01/01/2006

F 1999 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 10/19/1999

S 2003 Coliform (TCR) Monitoring, Repeat Minor (TCR) TCR Not Reported 05/01/2003

S 2003 Coliform (TCR) Monitoring, Routine Minor (TCR) TCR Not Reported 06/01/2003

S 1993 Lead and Copper Rule Initial Tap Sampling for Pb and Cu LCR Not Reported 01/01/1993

S 2001 Consumer Confidence Rule CCR Complete Failure to Report CCR Not Reported 07/01/2001

System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	24
Contaminant:	3100	Compliance Begin:	1999-07-01
Compliance End:	1999-07-31	Violation ID:	0000001
Enforcement Date:	1999-09-02	Enforcement Action:	SIE
Emoleciment Date.	1000-00-02	Emoleciment Action.	OIL
System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	71
Contaminant:	7000	Compliance Begin:	1999-10-19
Compliance End:	2015-12-31	Violation ID:	00V0001
Enforcement Date:	2000-05-05	Enforcement Action:	EFJ
Emorcement Date.	2000-05-05	Emorcement Action.	LIJ
System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	71
Contaminant:	7000	Compliance Begin:	1999-10-19
Compliance End:	2015-12-31	Violation ID:	00V0001
Enforcement Date:	2000-09-22	Enforcement Action:	EFL
Emorcement Date.	2000-09-22	Emorcement Action.	
System Name:	MOUNTAIN VIEW MOBILE HOME P		
Violation Type:	71	Contaminant:	7000
Compliance Begin:	1999-10-19	Compliance End:	2015-12-31
Violation ID:	00V0001	Enforcement Date:	
Enforcement Action:		Enforcement Date.	2000-05-05
Enforcement Action:	EFJ		
System Name	MOUNTAIN VIEW MOBILE HOME P		
System Name:			7000
Violation Type:	71	Contaminant:	7000
Compliance Begin:	1999-10-19	Compliance End:	2015-12-31
Violation ID:	00V0001	Enforcement Date:	2000-09-22
Enforcement Action:	EFL		
Out the New York			
System Name:	MOUNTAIN VIEW MOBILE HOME P		7000
Violation Type:	71	Contaminant:	7000
Compliance Begin:	1999-10-19	Compliance End:	2015-12-31
Violation ID:	00V0001	Enforcement Date:	2000-09-22
Enforcement Action:	EFL		
Custom Nama		Violation Trans.	74
System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	71
Contaminant:	7000	Compliance Begin:	1999-10-19
Compliance End:	2015-12-31	Violation ID:	00V0001
Enforcement Date:	Not Reported	Enforcement Action:	Not Reported
System Name	MOUNTAIN VIEW MOBILE HOME P		
System Name:	71		7000
Violation Type:		Contaminant:	2015-12-31
Compliance Begin:	1999-10-19 0300328	Compliance End:	
Violation ID:		Enforcement Date:	2000-09-22
Enforcement Action:	EFL		
System Name:	MOUNTAIN VIEW MOBILE HOME P		
System Name: Violation Type:	71	Contaminant:	7000
51	1999-10-19		2015-12-31
Compliance Begin: Violation ID:		Compliance End:	
Enforcement Action:	0300489 EFL	Enforcement Date:	2000-09-22
Emorcement Action.	EFL		
System Name:	MOUNTAIN VIEW MOBILE HOME P		
System Name:	71	Contaminant:	7000
Violation Type:	7 1 10/19/99		7000 10/16/00
Compliance Begin: Violation ID:		Compliance End:	
	104 EFJ	Enforcement Date:	05/05/00
Enforcement Action:			
System Name:		ARK	
System Name:	MOUNTAIN VIEW MOBILE HOME P		7000
Violation Type:	71	Contaminant:	7000
Violation Type: Compliance Begin:	71 10/19/99	Contaminant: Compliance End:	10/16/00
Violation Type:	71	Contaminant:	

System Name:	MOUNTAIN VIEW MOBILE HOME F	ARK		
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	10/19/99	Compliance End:	10/16/00	
Violation ID:	104	Enforcement Date:	09/22/00	
Enforcement Action:	EFL			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	10/19/1999 0:00:00	Compliance End:	10/16/2000 0:00:00	
Violation ID:	104	Enforcement Date:	9/22/2000 0:00:00	
Enforcement Action:	EFL			
System Name:	MOUNTAIN VIEW MOBILE HOME P	ARK		
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	10/19/1999 0:00:00	Compliance End:	10/16/2000 0:00:00	
Violation ID:	104	Enforcement Date:	5/5/2000 0:00:00	
Enforcement Action:	EFJ			
System Name:	MOUNTAIN VIEW MOBILE HOME P	ARK		
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	10/19/1999 0:00:00	Compliance End:	10/16/2000 0:00:00	
Violation ID:	104	Enforcement Date:	10/16/2000 0:00:00	
Enforcement Action:	SOX			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	01/06/04	
Enforcement Action:	SIE			
System Name:	MOUNTAIN VIEW MOBILE HOME P	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	11/22/04	
Enforcement Action:	SIA			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	10/19/04	
Enforcement Action:	SO8			
System Name:	MOUNTAIN VIEW MOBILE HOME F	ARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	07/28/06	
Enforcement Action:	SOX			
System Name:	MOUNTAIN VIEW MOBILE HOME F	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	01/06/04	
Enforcement Action:	SIA			
System Name:	MOUNTAIN VIEW MOBILE HOME F	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	1/1/1993 0:00:00	Compliance End:	12/31/2025 0:00:00	
Violation ID:	155493	Enforcement Date:	10/19/2004 0:00:00	
Enforcement Action:	SO8			
System Name: MOUNTAIN VIEW MOBILE HOME PARK				
Violation Type:	51	Contaminant:	5000	

Compliance Begin:	1/1/1993 0:00:00	Compliance End:	12/31/2025 0:00:00	
Violation ID:	155493	Enforcement Date:	11/22/2004 0:00:00	
Enforcement Action:	SIA			
System Name:	MOUNTAIN VIEW MOBILE HOME			
Violation Type:	51	Contaminant:	5000	
Compliance Begin: Violation ID:	1/1/1993 0:00:00 155493	Compliance End:	12/31/2025 0:00:00	
Enforcement Action:	SIA	Enforcement Date:	1/6/2004 0:00:00	
Emorcement Action.	SIA			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	1/1/1993 0:00:00	Compliance End:	12/31/2025 0:00:00	
Violation ID:	155493	Enforcement Date:	1/6/2004 0:00:00	
Enforcement Action:	SIE			
System Name:	MOUNTAIN VIEW MOBILE HOME		5000	
Violation Type:	51	Contaminant:	5000	
Compliance Begin: Violation ID:	1/1/1993 0:00:00	Compliance End: Enforcement Date:	12/31/2025 0:00:00 6/3/2004 0:00:00	
Enforcement Action:	155493 SO8	Enforcement Date.	8/3/2004 0.00.00	
Emorcement Action.	308			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/93	Compliance End:	07/28/06	
Violation ID:	155493	Enforcement Date:	06/03/04	
Enforcement Action:	SO8			
System Name:	MOUNTAIN VIEW MOBILE HOME			
Violation Type:	5	Contaminant:	3100	
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00	
Violation ID: Enforcement Action:	155503 10/17/2006 0:00:00	Enforcement Date:	No Enf Action as of	
Emorcement Action.	10/17/2008 0.00.00			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	5	Contaminant:	3100	
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00	
Violation ID:	155503	Enforcement Date:	4/12/2007 0:00:00	
Enforcement Action:	Not Reported			
System Name:	MOUNTAIN VIEW MOBILE HOME		0.100	
Violation Type:	6	Contaminant:	3100	
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00	
Violation ID: Enforcement Action:	155603 10/17/2006 0:00:00	Enforcement Date:	No Enf Action as of	
Emoleciment Action.	10/11/2000 0.00.00			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	6	Contaminant:	3100	
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00	
Violation ID:	155603	Enforcement Date:	4/12/2007 0:00:00	
Enforcement Action:	Not Reported			
System Name:	MOUNTAIN VIEW MOBILE HOME		7000	
Violation Type:	71	Contaminant:	7000 6/29/2006 0:00:00	
Compliance Begin: Violation ID:	7/1/2005 0:00:00 155705	Compliance End: Enforcement Date:	6/29/2006 0:00:00	
Enforcement Action:	SOX	Emorecment Date.	012012000 0.00.00	
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	7/1/2005 0:00:00	Compliance End:	6/29/2006 0:00:00	
Violation ID:	155705	Enforcement Date:	8/31/2005 0:00:00	

Enforcement Action	CII.			
Enforcement Action:	SII			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	07/01/05	Compliance End:	06/29/06	
Violation ID:	155705	Enforcement Date:	08/31/05	
Enforcement Action:	SII			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	71	Contaminant:	7000	
Compliance Begin:	07/01/05	Compliance End:	06/29/06	
Violation ID:	155705	Enforcement Date:	06/29/06	
Enforcement Action:	SOX			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/05	Compliance End:	07/28/06	
Violation ID:	155806	Enforcement Date:	07/28/06	
Enforcement Action:	SOX			
System Name:				
System Name:			5000	
Violation Type:	51 1/1/2005 0:00:00	Contaminant:		
Compliance Begin: Violation ID:	155806	Compliance End: Enforcement Date:	12/31/2025 0:00:00	
	SIE	Emorcement Date.	4/25/2006 0:00:00	
Enforcement Action:	SIE			
System Name:	MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	1/1/2005 0:00:00	Compliance End:	12/31/2025 0:00:00	
Violation ID:	155806	Enforcement Date:	4/25/2006 0:00:00	
Enforcement Action:	SIA			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	51	Contaminant:	5000	
Compliance Begin:	01/01/05	Compliance End:	07/28/06	
Violation ID:	155806	Enforcement Date:	04/25/06	
Enforcement Action:	SIE		0 11 20/00	
System Name:	MOUNTAIN VIEW MOBILE HOME	Contaminant:	5000	
Violation Type:	01/01/05	Compliance End:	07/28/06	
Compliance Begin: Violation ID:	155806	Enforcement Date:	04/25/06	
Enforcement Action:	SIA	Enforcement Date.	04/23/00	
	0			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	26	Contaminant:	3100	
Compliance Begin:	5/1/2003 0:00:00	Compliance End:	5/31/2003 0:00:00	
Violation ID:	32803	Enforcement Date:	7/14/2003 0:00:00	
Enforcement Action:	SIE			
System Name:	ame: MOUNTAIN VIEW MOBILE HOME PARK			
Violation Type:	26	Contaminant:	3100	
Compliance Begin:	05/01/03	Compliance End:	05/31/03	
Violation ID:	32803	Enforcement Date:	07/14/03	
Enforcement Action:	SIE			
System Name:	MOUNTAIN VIEW MOBILE HOME	PARK		
Violation Type:	26	Contaminant:	3100	
Compliance Begin:	05/01/03	Compliance End:	05/31/03	
Violation ID:	32803	Enforcement Date:	07/30/03	
Enforcement Action:	SIF	Enoroemonic Date.	31100100	

System Name:	MOUNTAIN VIEW MOBILE HOME P 26	ARK Contaminant:	3100		
Violation Type: Compliance Begin:	5/1/2003 0:00:00	Compliance End:	5/31/2003 0:00:00		
Violation ID:	32803	Enforcement Date:	7/14/2003 0:00:00		
Enforcement Action:	SIA		.,		
System Name:	MOUNTAIN VIEW MOBILE HOME F				
Violation Type:	26	Contaminant:	3100		
Compliance Begin:	05/01/03	Compliance End:	05/31/03		
Violation ID: Enforcement Action:	32803 SIA	Enforcement Date:	07/14/03		
Emorcement Action.	SIA				
System Name:	MOUNTAIN VIEW MOBILE HOME PARK				
Violation Type:	26	Contaminant:	3100		
Compliance Begin:	5/1/2003 0:00:00	Compliance End:	5/31/2003 0:00:00		
Violation ID:	32803	Enforcement Date:	7/30/2003 0:00:00		
Enforcement Action:	SIF				
System Name:	MOUNTAIN VIEW MOBILE HOME F	PARK			
Violation Type:	24	Contaminant:	3100		
Compliance Begin:	06/01/03	Compliance End:	06/30/03		
Violation ID:	32903	Enforcement Date:	08/06/03		
Enforcement Action:	SIA				
System Name:	MOUNTAIN VIEW MOBILE HOME F	PARK			
Violation Type:	24	Contaminant:	3100		
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00		
Violation ID:	32903	Enforcement Date:	8/6/2003 0:00:00		
Enforcement Action:	SIA				
System Name:	MOUNTAIN VIEW MOBILE HOME F	PARK			
Violation Type:	24	Contaminant:	3100		
Compliance Begin:	6/1/2003 0:00:00	Compliance End:	6/30/2003 0:00:00		
Violation ID:	32903	Enforcement Date:	8/6/2003 0:00:00		
Enforcement Action:	SIE				
System Name:	MOUNTAIN VIEW MOBILE HOME P				
System Name: Violation Type:	24	Contaminant:	3100		
Compliance Begin:	06/01/03	Compliance End:	06/30/03		
Violation ID:	32903	Enforcement Date:	08/06/03		
Enforcement Action:	SIE				
System Name:	MOUNTAIN VIEW MOBILE HOME F		7000		
Violation Type: Compliance Begin:	71 7/1/2001 0:00:00	Contaminant: Compliance End:	4/25/2002 0:00:00		
Violation ID:	74501	Enforcement Date:	No Enf Action as of		
Enforcement Action:	10/17/2006 0:00:00	Emolocinent Date.			
System Name:	MOUNTAIN VIEW MOBILE HOME P		7000		
Violation Type:	71 7/1/2001 0:00:00	Contaminant: Compliance End:	7000 4/25/2002 0:00:00		
Compliance Begin: Violation ID:	74501	Enforcement Date:	4/23/2002 0:00:00		
Enforcement Action:	Not Reported	Emoleement Date.	4/12/2007 0.00.00		
System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	23		
Contaminant:	3100	Compliance Begin:	1998-06-01		
Compliance End:	1998-06-30	Violation ID:	98000366		
Enforcement Date:	Not Reported	Enforcement Action:	Not Reported		
System Name:	MOUNTAIN VIEW MOBILE HOME	Violation Type:	24		
Contaminant:	3100	Compliance Begin:	1999-07-01		
Compliance End:	1999-07-31	Violation ID:	9900456		

## Enforcement Date:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID:

1999-09-02

104 2000 Fed Formal NOV issued

104 2000 Fed FAO issued

104 2001 St Compliance achieved

155493 2004 St Violation/Reminder Notice Informal

155493 2004 St Public Notif requested

155493 2006 St Compliance achieved

155493 2005 St Other

155493 2005 St Violation/Reminder Notice Informal

155493 2004 St Other

155503 2003 St Compliance achieved

155603 2003 St Compliance achieved

155705 2006 St Compliance achieved

155705 2005 State CCR Follow-up Notice Informal

155806 2006 St Public Notif requested

155806

Orig Code: Enforcement Action: Enforcement Category:

Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

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Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code:

F 05/05/2000 Informal

SIE

F 09/22/2000 Formal

S 10/16/2000 Resolving

S 01/06/2004

S 01/06/2004 Informal

S 07/28/2006 Resolving

S 10/19/2004 Informal

S 11/22/2004

S 06/03/2004 Informal

S 06/30/2003 Resolving

S 05/31/2003 Resolving

S 06/29/2006 Resolving

S 08/31/2005

S 04/25/2006 Informal

S

Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: 2006 St Violation/Reminder Notice Informal

155806 2006 St Compliance achieved

155809 2011 St Compliance achieved

155810 2006 St Violation/Reminder Notice Informal

155810 2006 St Compliance achieved

155811 2006 St Compliance achieved

155811 2006 St Violation/Reminder Notice Informal

1V00 2000 Fed Formal NOV issued

1V00 2000 Fed FAO issued

1V00 2002 Fed Compliance achieved

32803 2003 St Compliance achieved

32803 2003 St Violation/Reminder Notice Informal

32803 2003 St Public Notif received

32803 2003 St Public Notif requested

32903 2003 St Violation/Reminder Notice Orig Code: Enforcement Action: Enforcement Category:

Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: Enforcement Category:

Orig Code: Enforcement Action: S 07/28/2006 Resolving

04/25/2006

S 10/22/2010 Resolving

S 04/25/2006

S 07/05/2006 Resolving

S 07/05/2006 Resolving

S 04/25/2006

F 05/05/2000 Informal

F 09/22/2000 Formal

F 07/11/2002 Resolving

S 06/30/2003 Resolving

S 07/14/2003

S 07/30/2003 Informal

S 07/14/2003 Informal

S 08/06/2003

#### Enforcement Category:

Violation ID: Enforcemnt FY: **Enforcement Detail:** 

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: **Enforcement Action:** Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail:

Violation ID: Enforcemnt FY: Enforcement Detail: Enforcement Category:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID:

32903 2003 St Public Notif requested

32903 2003 St Compliance achieved

74501 2003 11/19/2002 Resolving

Informal

Not Reported 2002 St Violation/Reminder Notice Not Reported

Not Reported 2004 St Violation/Reminder Notice Not Reported

Not Reported 2002 St Compliance achieved

Not Reported 2003 Fed Compliance achieved

Not Reported 2004 St Violation/Reminder Notice Not Reported

## MOUNTAIN VIEW MOBILE HOME PARK

90 104 71 10/16/2000 0:00:00 State Compliance Achieved

Fed Formal NOV Issued

Fed FAO Issued

MOUNTAIN VIEW MOBILE HOME PARK 90 104 71 10/16/2000 0:00:00

MOUNTAIN VIEW MOBILE HOME PARK 90 104 71 10/16/2000 0:00:00

Contaminant: Compliance start date: Enforcement date: Violation measurement:

MOUNTAIN VIEW MOBILE HOME PARK PWS type code: 90 155493 Contaminant:

Orig Code: Enforcement Action: Enforcement Category: S

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S 04/17/2002

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7000

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10/19/1999 0:00:00

10/16/2000 0:00:00

10/19/1999 0:00:00

10/19/1999 0:00:00

9/22/2000 0:00:00

5/5/2000 0:00:00

Not Reported

Not Reported

10/31/2003

04/25/2002

11/19/2002

10/31/2003

Not Reported

Not Reported

08/06/2003

06/30/2003

Fed Compliance achieved

Resolving

Informal

Orig Code: **Enforcement Action:** Enforcement Category:

Enforcement Detail:

Orig Code:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action:

Orig Code: Enforcement Action: Enforcement Category:

Oria Code: **Enforcement Action:** Enforcement Category:

Orig Code: Enforcement Action:

PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

PWS type code:

Not Reported

C LEAD & COPPER RULE

Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: 1/6/2004 0:00:00EnNot ReportedMOUNTAIN VIEW MOBILE HOME PARK90PW155493CoInitial Tap Sampling for Pb and Cu1/1/1993 0:00:00Co1/6/2004 0:00:00EnNot ReportedMOUNTAIN VIEW MOBILE HOME PARK

Initial Tap Sampling for Pb and Cu

1/1/1993 0:00:00

90 155493 Initial Tap Sampling for Pb and Cu 1/1/1993 0:00:00 10/19/2004 0:00:00 Not Reported

MOUNTAIN VIEW MOBILE HOME PARK 90 PW 155493 Co Initial Tap Sampling for Pb and Cu 1/1/1993 0:00:00 Co 11/22/2004 0:00:00 Ent Not Reported

## MOUNTAIN VIEW MOBILE HOME PARK

90 155493 Initial Tap Sampling for Pb and Cu 1/1/1993 0:00:00 6/3/2004 0:00:00 Not Reported

MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code:

90 155493 Initial Tap Sampling for Pb and Cu 1/1/1993 0:00:00 7/28/2006 0:00:00 Not Reported

MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code:

155503 5 6/30/2003 0:00:00 7/8/2009 0:00:00

MOUNTAIN VIEW MOBILE HOME PARK

90 155603 6 6/30/2003 0:00:00 7/8/2009 0:00:00

MOUNTAIN VIEW MOBILE HOME PARK90PWS type code:155705Contaminant:

Compliance end date: Enforcement action:

PWS type code:

Compliance end date:

Compliance start date:

Violation measurement:

Compliance start date:

Violation measurement:

Enforcement date:

PWS type code:

Enforcement date:

Contaminant:

Enforcement action:

Enforcement action:

Enforcement action:

PWS type code:

Contaminant:

Contaminant:

Contaminant:

Enforcement action:

PWS type code:

Contaminant:

Enforcement action:

PWS type code:

Contaminant:

Contaminant:

7/28/2006 0:00:00 State Violation/Reminder Notice

C LEAD & COPPER RULE

7/28/2006 0:00:00 State Public Notif Requested

C LEAD & COPPER RULE

7/28/2006 0:00:00 State Other

C LEAD & COPPER RULE

7/28/2006 0:00:00 State Violation/Reminder Notice

C LEAD & COPPER RULE

7/28/2006 0:00:00 State Other

C LEAD & COPPER RULE

7/28/2006 0:00:00 State Compliance Achieved

C COLIFORM (TCR) 6/1/2003 0:00:00 No Enf Action as of Not Reported

C COLIFORM (TCR) 6/1/2003 0:00:00 No Enf Action as of Not Reported

C 7000

Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID:

71 6/29/2006 0:00:00 State Compliance Achieved MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code: 155705 Contaminant: 71 6/29/2006 0:00:00 Enforcement date: SII MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code: 155806 Contaminant: Initial Tap Sampling for Pb and Cu 1/1/2005 0:00:00 Compliance end date: 4/25/2006 0:00:00 Not Reported MOUNTAIN VIEW MOBILE HOME PARK PWS type code: 90 155806 Contaminant: Initial Tap Sampling for Pb and Cu 1/1/2005 0:00:00 4/25/2006 0:00:00 Enforcement action: Not Reported MOUNTAIN VIEW MOBILE HOME PARK PWS type code: 90 Contaminant: 155806 Initial Tap Sampling for Pb and Cu 1/1/2005 0:00:00 Compliance end date: 7/28/2006 0:00:00 Not Reported MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code: 32803 Contaminant: Monitoring, Repeat Minor (TCR) 5/1/2003 0:00:00 7/14/2003 0:00:00 Not Reported MOUNTAIN VIEW MOBILE HOME PARK 90 PWS type code: 32803 Contaminant: Monitoring, Repeat Minor (TCR) 5/1/2003 0:00:00 Compliance end date: 7/14/2003 0:00:00

## MOUNTAIN VIEW MOBILE HOME PARK 90

32803 Monitoring, Repeat Minor (TCR) 5/1/2003 0:00:00 7/30/2003 0:00:00 Not Reported

Not Reported

MOUNTAIN VIEW MOBILE HOME PARK 90 32903

Compliance start date: Enforcement date: Violation measurement:

Compliance start date: Violation measurement:

Enforcement action:

Compliance end date:

Enforcement action:

Compliance end date: Enforcement action:

Enforcement action:

PWS type code: Contaminant:

Compliance end date: Enforcement action:

PWS type code: Contaminant:

7/1/2005 0:00:00 6/29/2006 0:00:00 Not Reported

С 7000 7/1/2005 0:00:00 8/31/2005 0:00:00 Not Reported

С LEAD & COPPER RULE

7/28/2006 0:00:00 State Violation/Reminder Notice

С LEAD & COPPER RULE

7/28/2006 0:00:00 State Public Notif Requested

С LEAD & COPPER RULE

7/28/2006 0:00:00 State Compliance Achieved

C COLIFORM (TCR)

5/31/2003 0:00:00 State Violation/Reminder Notice

С COLIFORM (TCR)

5/31/2003 0:00:00 State Public Notif Requested

С COLIFORM (TCR)

5/31/2003 0:00:00 State Public Notif Received

C COLIFORM (TCR)

Monitoring, Routine Minor (TCR)

Monitoring, Routine Minor (TCR)

MOUNTAIN VIEW MOBILE HOME PARK

MOUNTAIN VIEW MOBILE HOME PARK

6/1/2003 0:00:00

8/6/2003 0:00:00

6/1/2003 0:00:00

8/6/2003 0:00:00

4/25/2002 0:00:00

Fed Compliance Achieved

Not Reported

Not Reported

90

90

71

74501

32903

Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance start date: Enforcement date: Violation measurement:

PWS name: Population served: Violation ID: Violation type: Compliance end date: Enforcement action:

#### BA281 WSW 1/2 - 1 Mile

Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 01257 Not Reported 1957-11-15T00:00:00.000Z Not Reported 168 100 1957-12-05T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

Compliance end date: Enforcement action:

PWS type code: Contaminant:

Compliance end date: Enforcement action:

PWS type code: Contaminant: Compliance start date: Enforcement date: Violation measurement:

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

**Discharge Pipe Size:** 

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

6/30/2003 0:00:00 State Violation/Reminder Notice

C COLIFORM (TCR)

6/30/2003 0:00:00 State Public Notif Requested

C 7000 7/1/2001 0:00:00 11/19/2002 0:00:00 0

NM WELLS NM50000008411

**Rio Grande** Not Reported 1957-09-01T00:00:00.000Z Not Reported Not Reported Shallow 15 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

#### BB282 West 1/2 - 1 Mile

Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: Not Reported 75715 Not Reported 2001-05-09T00:00:00.000Z Not Reported 160 100 2001-05-18T00:00:00.000Z ONE HOUSEHOLD Not Reported Not Reported Not Reported

#### POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min):

NM WELLS NM500000069347

Rio Grande Not Reported 2001-05-08T00:00:00.000Z Not Reported Shallow 18 Not Reported Not Reported Not Reported Not Reported Not Reported 60

POD Status: Pod Subbasin: Static Level: Water Right Use:

BB283 West 1/2 - 1 Mile

Lower

Active Not Reported Not Reported DOM

Not Reported

DOM

Middle Rio Grande

48165

0

100

Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: 4.5 Not Reported Permit 3

NM WELLS NM50

**Rio Grande** 

NM500000176187

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BC284 North 1/2 - 1 N

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 32580 Not Reported 1979-06-16T00:00:00.000Z Not Reported 143 100 1979-10-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

POD Basin:

POD1 Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported 0 0 Not Reported Expired 0

NM WELLS NM500000023167

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1979-06-15T00:00:00.000Z Not Reported Not Reported Shallow 50 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

NM500000033035

BC285 North 1/2 - 1 Mile Lower

> Well Name: POD #:

Not Reported 25209

POD Basin: POD Suffix: Rio Grande POD1

NM WELLS

Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

BD286 NNE 1/2 - 1 Mile

Lower

Well Name:

Land Grant:

Well Completed:

Well Depth (ft):

OSE Filing Date:

Pump Serial #:

POD Status:

Static Level:

Well Name:

Pod Subbasin:

Water Right Use:

Surface Water Diversion:

% Shallow:

Well Use:

Aquifer:

**Completion Proved:** 

POD #:

Not Reported 1974-08-03T00:00:00.000Z Not Reported 118 100 1975-01-24T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

DOM

Middle Rio Grande

18655

0

100

Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

#### 1974-07-31T00:00:00.000Z

Not Reported Not Reported Shallow 66 Not Reported Not Reported Not Reported 3 0 4.5 Not Reported Permit 3

## NM WELLS NM500000022624

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 Not Reported O Not Reported O Not Reported Expired O

#### NM WELLS NM500000066243

BC287 North 1/2 - 1 Mile Lower

- POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 93210 NON 2012-02-18T00:00:00.000Z Not Reported 240 100 2012-03-12T00:00:00.000Z DRK/SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Rio Grande POD1 2012-02-18T00:00:00.000Z Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported 1 60 4 Not Reported Permit 1

Map ID Direction Distance Elevation

#### 288 NW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 07715 Not Reported 1962-07-27T00:00:00.000Z Not Reported 93 100 1963-07-15T00:00:00.000Z DOM/SANI/COMM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Database EDR ID Number

NM WELLS NM500000014687

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status:

**Diversion Amt Allowed:** 

## **Rio Grande** Not Reported 1962-07-19T00:00:00.000Z Not Reported Not Reported Shallow 41 Not Reported Not Reported Not Reported 3 0 4.5 Not Reported Permit 0

#### 289 NW 1/2 -

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 95043 NON 2014-10-31T00:00:00.000Z Not Reported 255 100 2014-11-21T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOL

## NM WELLS NM500000176851

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2014-10-31T00:00:00.000Z Not Reported Not Reported Shallow 18 Not Reported Not Reported Not Reported Not Reported 150 6 Not Reported Permit 3

#### BE290 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 51334 Not Reported 2016-10-25T00:00:00.000Z Not Reported 92 100

## NM WELLS NM500000203974

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD178 2016-10-24T00:00:00.000Z Not Reported Not Reported Shallow 70

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 291 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 11941 Not Reported 1928-01-01T00:00:00.000Z Not Reported 90 100

2016-12-12T00:00:00.000Z

POL

Active

MON

Not Reported

Middle Rio Grande

IRR

IRR

Middle Rio Grande

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

## NM WELLS NM500000000112

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Shallow 0 Not Reported CENTRI Not Reported Not Reported 0 0 Not Reported Permit 3

#### BE292 NNE 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported 2016-10-13T00:00:00.000Z Not Reported 95 100 2016-12-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

## NM WELLS NM500000203973

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD177 2016-10-12T00:00:00.000Z Not Reported Not Reported Shallow 76 Not Reported Not Reported Not Reported Not Reported 19 4 Not Reported Permit 0

Map ID Direction Distance Elevation

## BE293 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2016-10-21T00:00:00.000Z Not Reported 89 100 2016-12-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

#### Database EDR ID Number

NM WELLS NM500000203975

POD Basin:
POD Suffix:
Drilling Started:
Plug Date:
Elevation:
Groundwater Source:
Depth to Water:
Well Schedule Date:
Pump Type:
Discharge Pipe Size:
Max Diversion Allowed:
Est Yield (Gal/Min):
Casing Size:
Well Tag:
Water Right Status:
Diversion Amt Allowed:

Rio Grande POD179 2016-10-21T00:00:00.000Z Not Reported Not Reported Shallow 70 Not Reported Not Reported Not Reported Not Reported 1 4 Not Reported Permit 0

#### BF294 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 11013 Not Reported 1964-05-11T00:00:00.000Z Not Reported 105 100 1964-05-18T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

#### NM WELLS NM50000000601

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 1964-05-08T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

#### BF295 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 27174 Not Reported Not Reported Not Reported 0 100

## NM WELLS NM500000012658

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD1 Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BB296 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1985-03-04T00:00:00.000Z

1985-03-22T00:00:00.000Z

43207

106

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

## NM WELLS NM500000033995

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1985-03-04T00:00:00.000Z Not Reported Not Reported Shallow 16 Not Reported Not Reported Not Reported Not Reported 70 4.5 Not Reported Permit 3

#### BE297 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 93332 Not Reported 2012-05-16T00:00:00.000Z Not Reported 98 100 2013-07-19T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

## NM WELLS NM500000099312

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2012-05-04T00:00:00.000Z Not Reported Not Reported Shallow 64 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

Map ID

evation 3298			Database	EDR ID Numbe
est			NM WELLS	NM500000017202
2 - 1 Mile ower				
Well Name:	Not Reported	POD Basin:		Grande
POD #:	89922	POD Suffix:	POD	
Land Grant:	Not Reported	Drilling Started:		Reported
Well Completed:	Not Reported	Plug Date:		Reported
Completion Proved:	Not Reported	Elevation:		Reported
Well Depth (ft):	0	Groundwater Source:		Reported
% Shallow:	0	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:		Reported
Well Use:	Not Reported	Pump Type:		Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:		Reported
Aquifer:	Not Reported	Max Diversion Allowed:		Reported
Surface Water Diversion: POD Status:	Not Reported	Est Yield (Gal/Min):	0	
	Not Reported	Casing Size:	0	) e u  e ut e el
Pod Subbasin:	Not Reported	Well Tag:		Reported
Static Level:	Not Reported	Water Right Status: Diversion Amt Allowed:	Perm	It
Water Right Use:	DOM	Diversion Amit Allowed.	1	
D299 NE			NM WELLS	 NM50000006014
NE 2 - 1 Mile			NM WELLS	 NM500000006014
NE 2 - 1 Mile gher	Not Reported	DOD Basin:	_	
NE 2 - 1 Mile gher Well Name:	Not Reported	POD Basin:	Rio G	
NE 2 - 1 Mile gher Well Name: POD #:	93073	POD Suffix:	Rio G POD	Grande 1
NE 2 - 1 Mile gher Well Name: POD #: Land Grant:	93073 Not Reported	POD Suffix: Drilling Started:	Rio G POD Not F	Grande 1 Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed:	93073 Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date:	Rio G POD Not F Not F	Grande 1 Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved:	93073 Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation:	Rio G POD Not F Not F Not F	Grande 1 Reported Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft):	93073 Not Reported Not Reported Not Reported 0	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source:	Rio G POD Not F Not F Not F Not F	Grande 1 Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:	93073 Not Reported Not Reported Not Reported 0 0	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:	Rio G POD Not F Not F Not F Not F 0	Grande 1 Reported Reported Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:	93073 Not Reported Not Reported Not Reported 0 Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date:	Rio G POD Not F Not F Not F Not F 0 Not F	Grande 1 Reported Reported Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	Rio G POD Not F Not F Not F O Not F Not F	Grande 1 Reported Reported Reported Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date:	Rio G POD Not F Not F Not F Not F Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed:	Rio G POD Not F Not F Not F O Not F Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size:	Rio G POD Not F Not F Not F Not F Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size:	Rio G POD Not F Not F Not F Not F Not F Not F Not F 0 0	Grande 1 Reported Reported Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag:	Rio G POD Not F Not F Not F Not F Not F Not F Not F 0 0	Grande 1 Reported Reported Reported Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size:	Rio G POD Not F Not F Not F Not F Not F Not F Not F 0 0 Not F	Grande 1 Reported Reported Reported Reported Reported Reported Reported Reported
NE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status:	Rio G POD Not F Not F Not F Not F Not F Not F Not F O O Not F Perm	Grande 1 Reported Reported Reported Reported Reported Reported Reported Reported
VE 2 - 1 Mile gher Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level:	93073 Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported	POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status:	Rio G POD Not F Not F Not F Not F Not F Not F Not F O O Not F Perm	Grande 1 Reported Reported Reported Reported Reported Reported Reported Reported

# NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 02742 Not Reported 1959-01-25T00:00:00.000Z Not Reported 170 100

#### NM WELLS NM500000007842

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande Not Reported 1958-12-20T00:00:00.000Z Not Reported Not Reported Shallow 140

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BG301 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BH302 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 01038 Not Reported 1956-07-01T00:00:00.000Z Not Reported 73 100 Not Reported DAI Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported DAI

1959-02-04T00:00:00.000Z DOM AND STOCK Not Reported Not Reported Active Not Reported Not Reported Not Reported DOM

Not Reported

NON GRANT

Not Reported

DOM

89230

0

0

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 6.63 Not Reported Permit 3

#### NM WELLS NM500000048591

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 1

#### NM WELLS NM500000033837

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported Not Reported Not Reported Not Reported Shallow Ω Not Reported Not Reported Not Reported 211.8 0 6 Not Reported Permit 138.86

Map ID Direction Distance Elevation

## BA303 WSW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 64212 Not Reported 1996-07-22T00:00:00.000Z Not Reported 50 100 1996-08-29T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Database EDR ID Number

NM WELLS NM500000186533

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed:

**Rio Grande** POD1 1996-07-22T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 3

#### BC304 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 95116 NON 2015-02-16T00:00:00.000Z Not Reported 255 100 2015-03-13T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000182792

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Casing Size:

Well Tag:

**Rio Grande** POD1 2015-02-12T00:00:00.000Z Not Reported Not Reported Shallow 60 Not Reported Not Reported Not Reported Not Reported 50 4 Not Reported Permit 1

#### BI305 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 40236 Not Reported 1983-08-25T00:00:00.000Z Not Reported 248 100

## NM WELLS NM500000012617

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande

Not Reported 1983-08-24T00:00:00.000Z Not Reported Not Reported Shallow 60

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BJ306 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1991-09-04T00:00:00.000Z DOM/SAN Not Reported Not Reported Not Reported Active Not Reported Not Reported COM

Not Reported

Not Reported

2012-12-12T00:00:00.000Z

2012-12-20T00:00:00.000Z

93700

NA

155

100

DOM HH

Active

DOM

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported S0 80 4.5 Not Reported Permit 53

#### NM WELLS NM500000161965

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 2012-12-11T00:00:00.000Z Not Reported Not Reported Shallow 42 Not Reported Not Reported Not Reported 30 4 Not Reported Permit

#### BK307 NNE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 26614 Not Reported 1975-12-08T00:00:00.000Z Not Reported 200 100 1975-12-11T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM50000000760

1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1975-12-04T00:00:00.000Z Not Reported Not Reported Shallow 12 Not Reported Not Reported Not Reported Not Reported 20 4.5 Not Reported Permit 3

#### TC5672600.5s Page 163

Map ID Direction Distance Elevation

#### **BK308** NNE

## 1/2 - 1 Mile Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 26614 Not Reported 1991-04-30T00:00:00.000Z Not Reported 200 100 1991-08-14T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### Database EDR ID Number

NM WELLS NM500000144048

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD2 1991-04-29T00:00:00.000Z Not Reported Not Reported Shallow 98 Not Reported Not Reported Not Reported 3 40 4.5 Not Reported Permit 3

#### **BE309** North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2009-08-28T00:00:00.000Z Not Reported 84 100 2009-12-30T00:00:00.000Z MON Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

#### POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

NM WELLS

# **Rio Grande** POD102 2009-08-28T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported

NM500000153255

## BH310 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 01038 Not Reported Not Reported Not Reported 72 0

#### **NM WELLS** NM500000131039

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water:

Well Schedule Date:

**Discharge Pipe Size:** 

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Pump Type:

Casing Size:

Well Tag:

**Rio Grande** 

S Not Reported Not Reported Not Reported Not Reported 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 311 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DAI

Not Reported

Middle Rio Grande

Active

DOM

1987-09-21T00:00:00.000Z

1987-10-01T00:00:00.000Z

48286

194

100

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 8 Not Reported Permit 138.86

## NM WELLS NM500000176697

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 1987-09-21T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported Not Reported 80 4 Not Reported Permit 3

#### 312 NW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 80137 NON GRANT 2003-05-10T00:00:00.000Z Not Reported 220 100 2003-05-13T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

## NM WELLS NM500000132222

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** Not Reported 2003-05-08T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported Not Reported 35 4.5 Not Reported Permit 3

Map ID Direction Distance

Distance Elevation			Database	EDR ID Number
BI313 North 1/2 - 1 Mile Lower			NM WELLS	NM500000217490
Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:	Not Reported 51334 Not Reported Not Reported Not Reported O Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:	POD Not F Not F Not F O Not F Not F Not F	Reported Reported Reported Reported Reported Reported Reported Reported
BE314 NNE 1/2 - 1 Mile Lower			NM WELLS	NM500000022207
Well Name: POD #: Land Grant: Well Completed: Completion Proved:	Not Reported 21332 Not Reported 1972-06-29T00:00:00.000Z Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation:	POD 1972 Not F	Grande 1 -06-29T00:00:00.000Z Reported Reported

Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Well Depth (ft):

OSE Filing Date:

Pump Serial #:

% Shallow:

Well Use:

BL315 NNE 1/2 - 1 Mile Higher

> Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:

Not Reported 1972-06-29T00:00:00.000Z Not Reported 121 100 1972-07-10T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

Not Reported

Not Reported

Not Reported

1973-05-09T00:00:00.000Z

22776

167

100

POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Rio Grande POD1 1972-06-29T00:00:00.000 Not Reported Not Reported Shallow 55 Not Reported Not Reported Not Reported 3 0 5.56 Not Reported Permit 3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1973-03-29T00:00:00.000Z Not Reported Not Reported Shallow 80

NM500000013390

NM WELLS

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BL316 NNE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

1973-06-07T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

1969-04-24T00:00:00.000Z

1969-05-20T00:00:00.000Z

16566

104

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported 3 0 6 Not Reported Permit 3

## NM WELLS NM500000019612

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1969-04-19T00:00:00.000Z Not Reported Shallow 20 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit

#### BL317 NNE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 28040 Not Reported 1976-12-08T00:00:00.000Z Not Reported 121 100 1977-02-04T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000033605

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1976-12-06T00:00:00.000Z Not Reported Not Reported Shallow 83 Not Reported Not Reported Not Reported Not Reported 0 4.5 Not Reported Permit 3

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

Max Diversion Allowed:

Map ID Direction Distance Elevation

#### 318 South

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 73518 Not Reported 2000-02-24T00:00:00.000Z Not Reported 364 100 2000-02-28T00:00:00.000Z DOM SAN Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### Database EDR ID Number

S NM500000093010

NM WELLS NM5000

**Rio Grande** Not Reported 2000-02-22T00:00:00.000Z Not Reported Not Reported Shallow 70 Not Reported Not Reported Not Reported 3 50 5 Not Reported Permit 3

#### BJ319 NNW 1/2 - 1 Mile

Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 36463 NON 1981-06-11T00:00:00.000Z Not Reported 90 100 1981-07-02T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

## NM WELLS NM500000009609

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1981-06-08T00:00:00.000Z Not Reported Not Reported Shallow 0 Not Reported Not Reported Not Reported 3 20 6 Not Reported Permit 3

#### 320 NW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 75793 Not Reported 2003-05-05T00:00:00.000Z Not Reported 240 100

## NM WELLS NM500000100496

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported 2003-05-05T00:00:00.000Z Not Reported Not Reported Shallow 28

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BG321 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

# Not Reported DOM Not Reported 87499 NON-GRANT

2006-08-29T00:00:00.000Z

2006-09-06T00:00:00.000Z

Not Reported

LIVESTOCK

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Active

STK

150

100

2003-05-09T00:00:00.000Z

DOM

Active

Not Reported

Not Reported

Not Reported

Not Reported

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 50 4 Not Reported Permit 3

## NM WELLS NM500000172026

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 2006-08-28T00:00:00.000Z Not Reported Not Reported Shallow 3 Not Reported Not Reported Not Reported Not Reported 60 4.5 Not Reported Permit 3

#### BG322 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 94478 Not Reported 2014-02-21T00:00:00.000Z Not Reported 180 100 2014-02-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported STK

## NM WELLS NM500000172029

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 2014-02-20T00:00:00.000Z Not Reported Not Reported Shallow 14 Not Reported Not Reported Not Reported Not Reported 45 4 Not Reported Permit 3

Map ID Direction Distance Elevation

#### BM323 NNE

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 95755 NON 2016-01-11T00:00:00.000Z Not Reported 420 100 2016-02-12T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

#### Database EDR ID Number

NM WELLS NM500000206983

	Die Oranda
POD Basin:	Rio Grande
POD Suffix:	POD1
Drilling Started:	2016-01-06T00:00:00.000Z
Plug Date:	Not Reported
Elevation:	Not Reported
Groundwater Source:	Shallow
Depth to Water:	73
Well Schedule Date:	Not Reported
Pump Type:	Not Reported
Discharge Pipe Size:	Not Reported
Max Diversion Allowed:	1
Est Yield (Gal/Min):	50
Casing Size:	4
Well Tag:	Not Reported
Water Right Status:	Permit
Diversion Amt Allowed:	1

# eported

# BN324 West 1/2 - 1 Mile

Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 39845 Not Reported 1983-06-28T00:00:00.000Z Not Reported 95 100 1983-07-13T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### NM WELLS NM500000163493

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1983-06-28T00:00:00.000Z Not Reported Not Reported Shallow 10 Not Reported Not Reported Not Reported Not Reported 70 4.5 Not Reported Permit 3

## BN325 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 39845 Not Reported 1984-01-01T00:00:00.000Z Not Reported 50 100

## **NM WELLS**

NM500000163494

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

Rio Grande POD2 Not Reported Not Reported Not Reported Shallow 0

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BN326 West 1/2 - 1 Mile

Lower Well Name: POD #:

- Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 68008 Not Reported 1997-08-04T00:00:00.000Z Not Reported 27 100 1997-08-26T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Not Reported Not Reported DOM

1997-10-24T00:00:00.000Z

Not Reported

Not Reported

Not Reported

Not Reported

Not Reported

Middle Rio Grande

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 30 2 Not Reported Permit 3

## NM WELLS NM500000186714

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

## Rio Grande Not Reported 1997-08-04T00:00:00.000Z Not Reported Shallow 13 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit

#### 327 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 46157 Not Reported Not Reported Not Reported 0 100 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Middle Rio Grande Not Reported DOM

## NM WELLS NM500000163501

3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Expired 0

Map ID Direction Distance Elevation

#### BO328 WNW

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- BG329 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:

Pod Subbasin:

Water Right Use:

Static Level:

330 SW 1/2 - 1 Mile Lower

> Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow:

Not Reported 01038 Not Reported 1959-06-29T00:00:00.000Z 1977-06-17T00:00:00.000Z 55 100

Not Reported Not Reported 1989-09-26T00:00:00.000Z Not Reported 1989-11-02T00:00:00.000Z Not Reported Not Reported Not Reported

51595

150

100

DOM

Active

DOM

Middle Rio Grande

Not Reported

Not Reported

NON GRANT

Not Reported

Pending

DOM

82441

65

0

## Database

EDR ID Number

NM WELLS NM500000009451

> **Rio Grande** POD1

1989-09-25T00:00:00.000Z

Not Reported

Shallow

7

30

4.5

3

Permit

Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

POD Basin:

POD Suffix:

Drilling Started:

NM WELLS NM500000172025

**Rio Grande** 

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported 0 4 Not Reported Expired 0

#### **NM WELLS** NM500000024692

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:

**Rio Grande** S 3 1959-06-29T00:00:00.000Z Not Reported Not Reported Shallow 15

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 331 NE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 1960-02-11T00:00:00.000Z DAIRY Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DAI

Not Reported

Middle Rio Grande

2009-07-16T00:00:00.000Z

2009-12-30T00:00:00.000Z

51334

160

100

MON

Active

MON

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported SUBMER 1.5 Not Reported 25 3 Not Reported Permit 138.86

## NM WELLS NM500000153290

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD109 2009-07-15T00:00:00.000Z Not Reported 5020 Shallow 130 Not Reported Not Reported Not Reported Not Reported 0 4 Not Reported Permit 0

#### BM332 NNE 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 41291 NON 1984-02-16T00:00:00.000Z Not Reported 145 100 1984-03-15T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported SAN

## NM WELLS NM500000029890

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1984-02-15T00:00:00.000Z Not Reported Not Reported Shallow 30 Not Reported Not Reported Not Reported 3 20 5 Not Reported Permit 3

Map ID Direction Distance Elevation

33				
/NW /2 - 1 Mile ower			NM WELLS	NM50000016349
Well Name:	Not Reported	POD Basin:	Rio C	Grande
POD #:	40876	POD Suffix:	POD	1
Land Grant:	Not Reported	Drilling Started:	Not F	Reported
Well Completed:	Not Reported	Plug Date:	Not F	Reported
Completion Proved:	Not Reported	Elevation:	Not Reported	
Well Depth (ft):	0	Groundwater Source:	Not Reported	
% Shallow:	100	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:	Not F	Reported
Well Use:	Not Reported	Pump Type:	Not F	Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not F	Reported
Aquifer:	Not Reported	Max Diversion Allowed:	Not F	Reported
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Not Reported	Casing Size:	0	
Pod Subbasin:	Middle Rio Grande	Well Tag:	Not F	Reported
Static Level:	Not Reported	Water Right Status:	Expir	ed
	5014	Diversion Amt Allowed:	0	
Water Right Use:	DOM	Diversion Ant Allowed.		NME0000013528
P334 Vest /2 - 1 Mile	ЬОМ	Diversion Ant Allowed.	NM WELLS	NM500000013528
P334 /est /2 - 1 Mile ower		POD Basin:	NM WELLS	 NM500000013528
P334 /est /2 - 1 Mile	Not Reported 92126		NM WELLS	
P334 /est /2 - 1 Mile ower Well Name:	Not Reported	POD Basin: POD Suffix:	NM WELLS Rio C POD	Grande 1
P334 /est /2 - 1 Mile ower Well Name: POD #: Land Grant:	Not Reported 92126	POD Basin: POD Suffix: Drilling Started:	NM WELLS Rio C POD Not F	Grande 1 Reported
P334 /est /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed:	Not Reported 92126 NON	POD Basin: POD Suffix:	NM WELLS Rio C POD Not F Not F	Grande 1 Reported Reported
P334 lest 2 - 1 Mile ower Well Name: POD #: Land Grant:	Not Reported 92126 NON Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date:	NM WELLS Rio C POD Not F Not F Not F	Grande 1 Reported
P334 lest 2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved:	Not Reported 92126 NON Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation:	NM WELLS Rio C POD Not F Not F Not F	Grande 1 Reported Reported Reported
P334 /est 2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:	Not Reported 92126 NON Not Reported Not Reported 0	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source:	NM WELLS Rio C POD Not F Not F Not F Not F	Grande 1 Reported Reported Reported
P334 /est 2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft):	Not Reported 92126 NON Not Reported Not Reported 0 0	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:	NM WELLS Rio C POD Not F Not F Not F Not F O Not F	Grande 1 Reported Reported Reported Reported Reported
P334 /est 2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date:	NM WELLS Rio C POD Not F Not F Not F O Not F Not F	Grande 1 Reported Reported Reported Reported
P334 /est 2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	NM WELLS Rio C POD Not F Not F Not F O Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported Reported
P334 /est /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size:	NM WELLS Rio C POD Not F Not F Not F O Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported Reported Reported
P334 /est /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed:	NM WELLS Rio C POD Not F Not F Not F Not F Not F Not F Not F Not F	Grande 1 Reported Reported Reported Reported Reported Reported Reported
P334 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min):	NM WELLS Rio C POD Not F Not F Not F Not F Not F Not F Not F Not F O 0	Grande 1 Reported Reported Reported Reported Reported Reported Reported
BP334 Vest /2 - 1 Mile .ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:	Not Reported 92126 NON Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size:	NM WELLS Rio C POD Not F Not F Not F Not F Not F Not F Not F Not F O 0	Grande 1 Reported Reported Reported Reported Reported Reported Reported Reported

#### BO335 WNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 58337 NON 1993-09-29T00:00:00.000Z Not Reported 250 100

# NM WELLS NM50000006441

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD1 1993-09-28T00:00:00.000Z Not Reported Not Reported Shallow 36

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## BP336 West 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 1993-11-08T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

Middle Rio Grande

Active

DOM

1988-03-18T00:00:00.000Z

1988-04-08T00:00:00.000Z

48707

145

100

Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Not Reported 25 4.5 Not Reported Permit 3

#### NM WELLS NM500000190537

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

POD Basin:

POD Suffix:

Plug Date:

Elevation:

Drilling Started:

Depth to Water:

Pump Type:

Casing Size:

Well Tag:

Groundwater Source:

Well Schedule Date:

Discharge Pipe Size:

Est Yield (Gal/Min):

Water Right Status:

**Diversion Amt Allowed:** 

## **Rio Grande** POD1 1988-03-18T00:00:00.000Z Not Reported Not Reported Shallow 14 Not Reported Not Reported Not Reported Not Reported 80 4.5 Not Reported Permit

## BQ337 WSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 35887 NON 1981-04-08T00:00:00.000Z Not Reported 42 100 1981-06-04T00:00:00.000Z DOM Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

#### NM WELLS NM50000006484

3

**Rio Grande** POD1 1981-04-08T00:00:00.000Z Not Reported Not Reported Shallow 12 Not Reported Not Reported Not Reported Max Diversion Allowed: 3 0

> 2 Not Reported

Permit 3

Map ID Direction Distance Elevation

#### BR338 ENE

1/2 - 1 Mile Higher

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 33528 Not Reported 2007-08-09T00:00:00.000Z Not Reported 438 100 2007-08-14T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported IND

#### Database EDR ID Number

NM WELLS NM500000191897

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD2 2007-08-07T00:00:00.000Z Not Reported Not Reported Shallow 198 Not Reported Not Reported Not Reported Not Reported 40 4.5 Not Reported Permit 3

#### BS339 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported 2016-03-03T00:00:00.000Z Not Reported 95 100 2016-08-03T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

# NM WELLS NM500000198729

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD169 2016-03-01T00:00:00.000Z Not Reported Not Reported Shallow 68 Not Reported Not Reported Not Reported Not Reported 30 4 Not Reported Permit 0

#### BT340 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 59201 Not Reported 1994-03-24T00:00:00.000Z Not Reported 120 100

## NM WELLS NM500000016569

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD2 1994-03-23T00:00:00.000Z Not Reported Not Reported Shallow 25

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## BT341 SSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

## BR342 ENE 1/2 - 1 Mile Higher

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Middle Rio Grande Not Reported MUL Not Reported 59201 Not Reported Not Reported

1994-03-28T00:00:00.000Z

MUL

Active

Not Reported

Middle Rio Grande

Active

IND

1980-01-16T00:00:00.000Z

1980-03-11T00:00:00.000Z

33528

330

100

MUL

Middle Rio Grande

100

0

Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

Not Reported Not Reported Not Reported Not Reported 35 4 Not Reported Permit 3

#### NM WELLS NM500000061326

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD1 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 6 Not Reported Permit 3

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:

Casing Size:

Well Tag:

NM WELLS NM500000010684

**Rio Grande** POD1 1980-01-14T00:00:00.000Z Not Reported Not Reported Shallow 220 Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): 100 5.25 Water Right Status: Permit **Diversion Amt Allowed:** 3

Not Reported Not Reported Not Reported Not Reported Not Reported

Map ID Direction Distance Elevation

13 NE 2 - 1 Mile		I	NM WELLS	NM50000001510
igher				
Well Name:	Not Reported	POD Basin:		Grande
POD #:	93426	POD Suffix:	POD	
Land Grant:	Not Reported	Drilling Started:		Reported
Well Completed:	Not Reported	Plug Date:		Reported
Completion Proved:	Not Reported	Elevation:		Reported
Well Depth (ft):	0	Groundwater Source:		Reported
% Shallow:	0	Depth to Water:	0	
OSE Filing Date:	Not Reported	Well Schedule Date:		Reported
Well Use:	Not Reported	Pump Type:	Not F	Reported
Pump Serial #:	Not Reported	Discharge Pipe Size:	Not F	Reported
Aquifer:	Not Reported	Max Diversion Allowed:	Not F	Reported
Surface Water Diversion:	Not Reported	Est Yield (Gal/Min):	0	
POD Status:	Pending	Casing Size:	0	
Pod Subbasin:	Middle Rio Grande	Well Tag:	Not F	Reported
Static Level:	Not Reported	Water Right Status:	Perm	it
	, total '	Diversion And Allering de		
Water Right Use:	MON	Diversion Amt Allowed:	0	
P344 Vest /2 - 1 Mile	MON		NM WELLS	 NM50000001309
P344 Vest /2 - 1 Mile	MON			 NM5000001309
P344 Vest /2 - 1 Mile	MON Not Reported		NM WELLS	
P344 Vest /2 - 1 Mile ower			NM WELLS Rio G	
P344 Vest /2 - 1 Mile ower Well Name:	Not Reported	POD Basin:	NM WELLS Rio G Not F	Grande
P344 /est /2 - 1 Mile ower Well Name: POD #:	Not Reported 81823	POD Basin: POD Suffix:	NM WELLS Rio G Not F Not F	Grande Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant:	Not Reported 81823 Not Reported	POD Basin: POD Suffix: Drilling Started:	NM WELLS Rio G Not F Not F Not F	Grande Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed:	Not Reported 81823 Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date:	NM WELLS Rio G Not F Not F Not F Not F	Grande Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved:	Not Reported 81823 Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation:	NM WELLS Rio G Not F Not F Not F Not F	Grande Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft):	Not Reported 81823 Not Reported Not Reported Not Reported 110	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source:	NM WELLS Rio G Not F Not F Not F Not F Not F 0	Grande Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow:	Not Reported 81823 Not Reported Not Reported Not Reported 110 0	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water:	NM WELLS Rio G Not F Not F Not F Not F Not F 0 Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date:	Not Reported 81823 Not Reported Not Reported Not Reported 110 0 Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date:	NM WELLS Rio G Not F Not F Not F Not F Not F 0 Not F Not F Not F	Grande Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use:	Not Reported 81823 Not Reported Not Reported Not Reported 110 0 Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type:	NM WELLS Rio G Not F Not F Not F Not F Not F Not F Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #:	Not Reported 81823 Not Reported Not Reported Not Reported 110 0 Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size:	NM WELLS Rio G Not F Not F Not F Not F Not F Not F Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer:	Not Reported 81823 Not Reported Not Reported 110 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed:	NM WELLS Rio G Not F Not F Not F Not F Not F Not F Not F Not F Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion:	Not Reported 81823 Not Reported Not Reported 110 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min):	NM WELLS Rio G Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported Reported
P344 Vest /2 - 1 Mile ower Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status:	Not Reported 81823 Not Reported Not Reported 110 0 Not Reported Not Reported Not Reported Not Reported Not Reported Not Reported Pending	POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size:	NM WELLS Rio G Not F Not F	Grande Reported Reported Reported Reported Reported Reported Reported Reported

#### 345 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 78279 TOWN OF ATRISCO Not Reported Not Reported 60 0

## NM WELLS NM500000104380

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande Not Reported Not Reported Not Reported Not Reported 0

Not Reported

Middle Rio Grande

Pending

MON

51334

0

0

Pending

DOM

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BU346 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### BQ347 WSW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 52296 Not Reported 1990-06-01T00:00:00.000Z Not Reported 57 100 1990-06-06T00:00:00.000Z Not Reported Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 0 3 Not Reported Expired 0

#### NM WELLS NM500000203977

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

**Rio Grande** POD181 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

#### NM WELLS NM500000199677

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1990-05-31T00:00:00.000Z Not Reported Not Reported Shallow 6 Not Reported Not Reported Not Reported Not Reported 25 4 Not Reported Permit 3

Map ID Direction Distance Elevation

#### BV348 NNW

## 1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- NON 1975-04-14T00:00:00.000Z Not Reported 70 100 1975-04-21T00:00:00.000Z Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported DOM

Not Reported

25847

#### Database EDR ID Number

\_\_\_\_\_

NM WELLS NM500000021566

POD Basin:	Ri
POD Suffix:	P
Drilling Started:	19
Plug Date:	No
Elevation:	No
Groundwater Source:	Sł
Depth to Water:	40
Well Schedule Date:	No
Pump Type:	No
Discharge Pipe Size:	No
Max Diversion Allowed:	No
Est Yield (Gal/Min):	0
Casing Size:	2
Well Tag:	No
Water Right Status:	Pe
Diversion Amt Allowed:	3

## Rio Grande POD1 1975-04-11T00:00:00.000Z Not Reported Shallow 40 Not Reported Not Reported Not Reported Not Reported 0 2 Not Reported Permit

#### BU349 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 01432 Not Reported 1958-01-28T00:00:00.000Z Not Reported 120 100 1958-02-18T00:00:00.000Z ABANDONED Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported IND

NM WELLS NM500000015650

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD1 1958-01-27T00:00:00.000Z Not Reported Not Reported Shallow 49 Not Reported TURBIN Not Reported 60 0 12 Not Reported Permit 60

#### BV350 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: Not Reported 25847 NON 1982-11-09T00:00:00.000Z Not Reported 120 100

## NM WELLS NM500000001564

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Rio Grande POD2 1982-11-09T00:00:00.000Z Not Reported Not Reported Shallow 45

OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

#### 351 NNW 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

# Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported CLS

1982-11-22T00:00:00.000Z

Not Reported

Middle Rio Grande

2010-09-17T00:00:00.000Z

2010-10-06T00:00:00.000Z

92310

85

100

DOM

Active

DOM

Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed: Not Reported Not Reported Not Reported 3 70 4.5 Not Reported Closed File 0

## NM WELLS NM500000149335

POD Basin: POD Suffix: **Drilling Started:** Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: Diversion Amt Allowed:

Rio Grande POD1 2010-09-17T00:00:00.000Z Not Reported 55 4 Not Reported Permit

#### BS352 North 1/2 - 1 Mile Lower

Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:

Not Reported 51334 Not Reported Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON

## NM WELLS NM500000205019

1

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD186 Not Reported Not Reported Not Reported Not Reported 0 Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

Map ID Direction Distance Elevation

## BU353 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: **Completion Proved:** Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- BS354 North

1/2 - 1 Mile Lower

- Well Name: POD #: Land Grant: Well Completed: Completion Proved: Well Depth (ft): % Shallow: OSE Filing Date: Well Use: Pump Serial #: Aquifer: Surface Water Diversion: POD Status: Pod Subbasin: Static Level: Water Right Use:
- Not Reported 51334 Not Reported Not Reported Not Reported 0 0 Not Reported Not Reported Not Reported Not Reported Not Reported Pending Middle Rio Grande Not Reported MON
- Not Reported 51334 Not Reported 2016-10-21T00:00:00.000Z Not Reported 108 100 2016-12-12T00:00:00.000Z POL Not Reported Not Reported Not Reported Active Middle Rio Grande Not Reported MON

## Database EDR ID Number

NM WELLS NM500000203976

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: Discharge Pipe Size: Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD180 2016-10-21T00:00:00.000Z Not Reported Not Reported Shallow 72 Not Reported Not Reported Not Reported Not Reported 20 4 Not Reported Permit 0

#### NM WELLS NM500000205020

POD Basin: POD Suffix: Drilling Started: Plug Date: Elevation: Groundwater Source: Depth to Water: Well Schedule Date: Pump Type: **Discharge Pipe Size:** Max Diversion Allowed: Est Yield (Gal/Min): Casing Size: Well Tag: Water Right Status: **Diversion Amt Allowed:** 

**Rio Grande** POD187 Not Reported Not Reported Not Reported Not Reported Λ Not Reported Not Reported Not Reported Not Reported 0 0 Not Reported Permit 0

### **GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS** RADON

#### AREA RADON INFORMATION

State Database: NM Radon

Radon Test Results

Zip	Total Sites	Pct. < 4 Pci/L	4 < 10 Pci/L	10 < 20 Pci/L	> 20 Pci/L
	<u> </u>				
87105	36	88.9	11.1	0.0	0.0

Federal EPA Radon Zone for BERNALILLO County: 1

Note: Zone 1 indoor average level > 4 pCi/L.

: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L. : Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for Zip Code: 87105

Number of sites tested: 43

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	2.377 pCi/L	91%	9%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	1.900 pCi/L	100%	0%	0%

#### **TOPOGRAPHIC INFORMATION**

USGS 7.5' Digital Elevation Model (DEM)

Source: United States Geologic Survey

EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

#### HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.

Source: FEMA Telephone: 877-336-2627 Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory Source: US Fish & Wildlife Service Telephone: 505-248-6660

#### HYDROGEOLOGIC INFORMATION

AQUIFLOW<sup>R</sup> Information System

Source: EDR proprietary database of groundwater flow information

EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

#### **GEOLOGIC INFORMATION**

#### Geologic Age and Rock Stratigraphic Unit

Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)

The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database

Source: Department of Agriculture, Natural Resources Conservation Service (NRCS) Telephone: 800-672-5559

SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

### PHYSICAL SETTING SOURCE RECORDS SEARCHED

#### LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data

Source: EPA/Office of Drinking Water

Telephone: 202-564-3750

Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS) This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database Source: Office of the State Engineer Telephone: 505-827-6175

#### **OTHER STATE DATABASE INFORMATION**

Oil and Gas Well Locations Source: New Mexico Institute of Mining and Technology Telephone: 505-835-5142

#### RADON

State Database: NM Radon Source: Environment Department Telephone: 505-827-1093 Radon Test Results

Area Radon Information

Source: USGS

Telephone: 703-356-4020

The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones Source: EPA Telephone: 703-356-4020 Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

#### OTHER

Airport Landing Facilities: Private and public use landing facilities Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

### PHYSICAL SETTING SOURCE RECORDS SEARCHED

#### STREET AND ADDRESS INFORMATION

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# Appendix B Quality Assurance Project Plan





# **Quality Assurance Project Plan**

Albuquerque Products Terminal 6356 Desert Road Alburquerque, New Mexico

**GHD** | 14998 W 6<sup>th</sup> Ave Suite 800 Golden, CO 80401 075015 | Report No 27 - Appendix B | May 13 2019



# **Table of Contents**

1.	Introd	uction		1
2.	Projec	ct Organiza	ition	1
	2.1	Managem	ent Responsibilities	2
	2.2	Quality Assurance Responsibilities		
	2.3	Field Responsibilities		
	2.4	Laboratory Responsibilities		
		2.4.1	Approved Laboratory	4
	2.5	Project Or	ganization	5
	2.6	Problem Definition/Background Information		
	2.7	Project/Ta	sk Description	5
		2.7.1	Project Schedule	5
	2.8	Quality Ob	pjectives and Criteria for Measurement Data	5
	2.9 2.10	•	Data Quality Objectives	6 7 7 8 8 8 9 9 9 9 9 9 9 9 10 . 10
3.	Data (		and Acquisition	
0.	3.1		Process Design	
	0.1	3.1.1 3.1.2 3.1.3 3.1.4	Sampling Methods Field Equipment and Sample Container Cleaning Procedures Field Equipment Maintenance, Testing, and Inspection Requirements Inspection and Acceptance Requirements for Supplies and Sample Containers	. 12 . 12 . 12
	3.2	Sample H	andling and Custody Requirements	13
		3.2.1 3.2.2	Sample Handling Sample Custody	



4.

5.

# **Table of Contents**

		3.2.2.1 3.2.2.2 3.2.2.3	Field Custody Procedures Laboratory Custody Procedures Final Evidence Files Custody Procedures	. 16	
	3.3	Analytical	Method Requirements	. 16	
		3.3.1 3.3.2	Field Analytical Methods Laboratory Analytical Methods		
;	3.4	Quality Co	ontrol Requirements	. 17	
		3.4.1 3.4.2	Field Sampling Quality Control Analytical Quality Control		
	3.5	Instrumer	nt/Equipment Testing, Inspection, and Maintenance Requirements	. 17	
		3.5.1 3.5.2	Field Instrument Maintenance Laboratory Instrument Maintenance		
	3.6	Calibratio	n Procedures and Frequency	. 18	
		3.6.1 3.6.2	Field Instruments/Equipment Laboratory Instruments		
;	3.7	Inspectior	n/Acceptance Criteria for Supplies and Consumables	. 18	
		3.7.1 3.7.2	Field Supplies and Consumables Laboratory Supplies and Consumables		
;	3.8	Data Acq	uisition Requirements (Non-Direct Measurements)	. 19	
	3.9	Data Man	agement	. 19	
		3.9.1 3.9.2 3.9.3 3.9.4 3.9.5 3.9.6 3.9.7 3.9.8 3.9.9	Data Recording Data Validation Data Transformation/Data Reduction Data Transmittal/Transfer Data Analysis Data Assessment Data Tracking Data Storage and Retrieval Data Security	. 20 . 20 . 20 . 21 . 21 . 21 . 21 . 21	
	Asses	sment/Ov	ersight	. 22	
	4.1	Assessme	ents and Response Actions	. 22	
4	4.2	Reports to Management			
l	Data '	Verificatior	n/Validation and Usability	. 23	
!	5.1	Data Rev	iew, Verification, and Validation Requirements	. 23	
4	5.2	Verificatio	on and Validation Methods	. 24	
ł	5.3	Usability/I	Reconciliation with Data Quality Objectives	. 25	
		5.3.1 5.3.2 5.3.3 5.3.4	Precision Accuracy/Bias Sample Representativeness Completeness	. 25 . 27	



# **Table of Contents**

5.3.5	Comparability	. 27
	Sensitivity and Quantitation Limits	
5.3.7	Data Limitations and Actions	. 28

## **Figure Index**

- Figure 2.1 Project QA Organization
- Figure 3.1 Chain of Custody Form

### **Table Index**

- Table 2.1
   Summary of Sampling and Analysis Program
- Table 2.2 Analyte List and Quantitation Limits
- Table 3.1 Container, Preservation, and Shipping Requirements
- Table 3.2 Summary of Analytical Methods
- Table 3.3 Routine Preventive Maintenance Procedures and Schedules



### Quality Assurance Project Plan Signature Page

Site Name:	Albuquerque Products Terminal				
Location Address:	6356 Desert Road				
Ref. No.	075015	GHD Office:	Golden, CO		
Anticipated Start Date:		Anticipated P	roject Duration:	Ongoing	
Prepared By:		Date:	May 13, 2019		
	Julia Slusher				
Project Manager:		Date:			
	David Bonga				
Quality Assurance Officer:		Date:			
	Angela Bown				

<u>This signature page must be completed and be available on Site for review. This page does not,</u> <u>however, replace the QSF-016 requirements.</u>



# **Acronyms and Short Forms**

ANSI/ASQC	American National Standards Institute/American Society for Quality Control
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
DO	Dissolved Oxygen
DQOs	Data Quality Objectives
EDDs	Electronic Data Deliverables
EMF	Eastern Michaud Flats
EPA	United States Environmental Protection Agency
GC/MS	Gas Chromatography/Mass Spectrometry
GHD	GHD Services Inc.
GIS	Geographical Information System
HAZWOPER	Hazardous Waste Operations and Emergency Response
ICP	Inductively Coupled Plasma Spectrometer
ISE	Ion Selective Electrode
LCS	Laboratory Control Sample
LCS/LCSD	Laboratory Control Sample/Laboratory Control Sample Duplicate
LIMS	Laboratory Information Management System
MARLAP	Multi-Agency Radiological Laboratory Analytical Protocols
MDL	Method Detection Limit
MS	Matrix Spike
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NELAP	National Environmental Laboratory Accreditation Program
ORP	Oxidation-Reduction Potential
OU	Operable Unit
PARCCS	Precision, Accuracy, Representativeness, Comparability, Completeness, Sensitivity
%R	Percent Recovery
PE	Performance Evaluation
PM	Project Manager
QA	Quality Assurance
QA/QC	Quality Assurance/Quality Control
QAPP	Quality Assurance Project Plan
QC	Quality Control
RPD	Relative Percent Difference



# **Acronyms and Short Forms**

SA	Spike Added
Site	Albuquerque Products Terminal
SOP	Standard Operating Procedure
SR	Sample Result or Background
SSR	Spiked Sample Result
SW-846	"Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA SW-846, 3rd Edition with Updates I through V, 2014
UAO	Unilateral Administrative Order for Remedial Design and Remedial Action, United States Environmental Protection Agency (EPA) Docket No. CERCLA-10-2013-0116
VOC	Volatile Organic Compound
Work Plan	Intermediate (60%) Design Groundwater Investigation Work Plan



## 1. Introduction

This Quality Assurance Project Plan (QAPP) describes the policy, organization (analytical laboratory), functional activities, and quality assurance (QA) and quality control (QC) protocols to be utilized during implementation of the groundwater sampling plan at the Albuquerque Products Terminal in Albuquerque, New Mexico (Site). The QAPP is a planning document that provides a "blueprint" for obtaining the type and quantity of data needed to support environmental decision making. The QAPP integrates all technical and quality aspects of a project and documents all QA, QC, and technical activities and procedures associated with planning, implementing, and assessing environmental data collection operations.

United States Environmental Protection Agency (EPA) policy requires that all work performed by or on behalf of EPA involving the collection of environmental data be implemented in accordance with an EPA-approved QAPP. GHD Services Inc. (GHD) has prepared this QAPP in accordance with the EPA QAPP guidance documents "EPA Requirements for Quality Assurance Project Plans", EPA QA/R-5, reissued May 2006, and "EPA Guidance for Quality Assurance Project Plans", EPA QA/G-5, reissued December 2002.

In accordance with these documents, there are four basic groups of elements that must be included in a QAPP.

These four groups and associated elements follow:

- Group A Project Management. The elements in this group include all aspects of project management, project objectives, and project history.
- Group B Data Generation and Acquisition. The elements in this group include descriptions of the design and implementation of all measurement systems that will be used during the project.
- Group C Assessment/Oversight. The elements in this group encompass the procedures used to ensure proper implementation of the QAPP.
- Group D Data Validation and Usability. The elements in this group cover the QA activities that occur after the data collection phase of the project is completed.

The elements associated with the project management, data generation and acquisition, assessment/oversight, and data validation and usability for the Work Plan are presented in this QAPP.

# 2. **Project Organization**

The responsibilities of management, QA personnel, field personnel, and laboratory personnel are provided in the following subsections. Additionally, any special training/certification requirements for the project are identified and an organization chart that identifies the lines of communication among the participants in the investigation activities is presented herein.



### 2.1 Management Responsibilities

#### New Mexico Environment Department (NMED)

NMED is the lead agency governing the remediation of the Albuquerque Products Terminal. NMED issued clean up regulations after the spill (s) were reported, and is responsible for approving all plans and reports related to implementing the Selected Remedy. The NMED regulator is Paul Chamberlain.

#### Phillips 66 Company (Phillips 66)

As the responsible party, Phillips 66 is implementing the Selected Remedy in accordance with the NMED. Phillips 66 has overall responsibility for procuring consultants and contractors to perform the work, budgeting and securing the necessary funds, and assuring that the requirements to adhere to the standards are met. The Phillips 66 Program Manager is Ms. Becky Hesslen.

#### Becky Hesslen – Program Manager – Phillips 66

- Technical representation for Phillips 66
- Advising on corrective actions
- Ensuring Phillips 66 resources are available on an as-required basis
- Reviewing reports
- Communication/Coordination with NMED

#### David Bonga - Project Manager – GHD

GHD has been selected as technical consultant for the Work Plan activities for the Albuquerque Products Terminal. GHD has technical responsibility for the data collection activities. GHD's Project Manager is ultimately responsible for ensuring that the project objectives are achieved. GHD's Project Manager has selected a project team consisting of GHD's technical personnel (engineering, geology/hydrogeology, chemistry, and data management), QA personnel, and the analytical laboratory. GHD's Project Manager for the investigation activities and her specific responsibilities are summarized by the following.

- Technical representation on behalf of Phillips 66
- Advising on corrective actions
- Overview of field activities
- Ensuring all GHD resources are available on an as-required basis
- Preparing and reviewing reports
- Coordinating GHD's technical group

#### Lab Project Manager (PM) – Approved Laboratory

The analytical laboratory for this project will hereafter in this document be identified as the "Approved Laboratory". The Approved Laboratory will be any analytical laboratory selected to perform the environmental analyses which is a full-service chemical analytical laboratory accredited



under National Environmental Laboratory Accreditation Program (NELAP) and certified in New Mexico. Additional laboratories may be required for any specialty environmental analyses that are required in the future. The laboratory Project Manager is responsible for ensuring the project objectives are achieved by the laboratories. The Approved Laboratory Project Manager and their specific responsibilities are summarized by the following:

- Ensures all resources of the laboratory are available on an as-required basis
- Review of final analytical reports
- Approve final reports prior to submission to GHD

### 2.2 Quality Assurance Responsibilities

Project team members with QA responsibilities include GHD's QA Officer, GHD's Field QA Officer, and the laboratory QA Officer. These individuals and their specific responsibilities are summarized by the following.

#### Angela Bown – Quality Assurance Officer – GHD

- Review laboratory quality assurance/quality control (QA/QC)
- Coordinate and review data validation and assessment
- Advise on laboratory corrective action procedures
- Prepare and review QA reports
- QA/QC representation of project activities

#### X– Field QA Officer – GHD

- Overview and review field QA/QC
- Management of field activities and field QA/QC
- Field data assessment
- Internal field technical system audits
- Technical representation of field activities
- Preparation of Standard Operating Procedures (SOPs) for field activities
- Implement and document field corrective actions, if necessary

#### Laboratory Quality Assurance Officer – Approved Laboratory

- Coordinate and overview of laboratory systems audits
- Overview of QA/QC documentation
- Conduct detailed data review
- Implement and document laboratory corrective actions, if required
- Technical representation of laboratory QA procedures
- Oversee preparation of laboratory SOPs



### 2.3 Field Responsibilities

GHD will conduct all field sampling and obtain field measurements related to sampling during the investigation. The specific procedures for field sample collection and field measurements will adhere to all designated SOPs for fieldwork and as described in any applicable work plan. GHD's field team leader will be responsible for documenting any field-related nonconformances and implementing and documenting subsequent corrective actions. The field team leader or any field team member can identify and report nonconformances.

### 2.4 Laboratory Responsibilities

#### 2.4.1 Approved Laboratory

*The Approved Laboratory* is expected to perform the analyses for the investigation. Specific information concerning the sampling and analysis requirements for the investigation are provided in Section 2.7 of this QAPP.

The shipping address and contact information for the laboratory will be provided by the laboratory prior to samples being collected. The specific responsibilities of laboratory personnel involved in the project are summarized by the following:

#### Laboratory Contact/PM – Approved Laboratory

- Coordinate laboratory analyses
- Supervise in-house chain of custody
- Sub-contract sample analyses as needed
- Schedule sample analyses
- Oversee data review
- Oversee preparation of analytical reports

#### Sample Custodian – Approved Laboratory

- Receive and inspect incoming sample containers
- Record the condition of incoming sample containers
- Sign appropriate documents
- Verify correctness of chain of custody documentation
- Notify project manager of any nonconformances identified during sample receipt and inspection
- Assign a unique identification number to each sample, and enter the client identification number and sample identification numbers into the sample receiving log
- Initiate transfer of the samples to appropriate laboratory sections
- Control and monitor access/storage of samples and extracts



### 2.5 **Project Organization**

The organization and lines of communication among the project participants identified in the preceding subsections are presented on Figure 2.1.

### 2.6 Problem Definition/Background Information

The problem definition and background information are detailed in the Work Plan.

This QAPP has been prepared by GHD on behalf of the client and focuses on specific QA/QC activities designed to achieve the objectives of the Work Plan at the site.

This QAPP is a dynamic document, and it will be updated with specific addenda, if necessary, to reflect new phases of work as they are implemented. Any necessary modifications will be made by GHD's QA Officer and will be reviewed by GHD's Project Manager. This QAPP will be reviewed on an annual basis by GHD's QA Officer to ensure it accurately reflects any work being conducted at the Site. It is anticipated that this QAPP will be utilized throughout the investigative process.

### 2.7 **Project/Task Description**

An overview of the sampling and analysis program is provided in Table 2.1. Target analytes and targeted reporting limits are presented in Table 2.2.

#### 2.7.1 Project Schedule

The program schedules will be presented in any applicable work plans and will be dependent on some critical items such as regulatory reviews and approvals and weather. These items may impact the ultimate implementation and completion of scheduled activities. Forthcoming work plans will provide schedules for any future sampling and analysis programs.

#### 2.8 Quality Objectives and Criteria for Measurement Data

The quality objectives and measurement performance criteria for data obtained for the investigation are presented in the following subsections.

#### 2.8.1 Data Quality Objectives

Data quality objectives (DQOs) are qualitative and quantitative statements derived from the outputs of each step of the DQO process. The DQO process is a series of planning steps based on the scientific method that is designed to ensure that the type, quantity, and quality of environmental data used in decision making are appropriate for the intended application. A systematic planning process was used to develop this work plan. This process, as described in EPA's Guidance on Systematic Planning Using the DQOs Process (EPA, 2006), is designed to ensure that environmental data are of the appropriate type and quality for the intended use, and lead to logical conclusions and defensible decisions or estimates. DQOs are developed through a seven-step process that is both sequential and iterative, depending upon the complexity of the problem. The steps involve both qualitative and quantitative criteria. The overarching outcomes of the DQO process are described below.



There are seven steps in the DQO process that include:

- 1. Stating the problem
- 2. Identifying the goal of the study
- 3. Identifying information inputs
- 4. Defining the boundaries of the study
- 5. Developing the analytical approach
- 6. Specifying performance or acceptance criteria
- 7. Developing the plan for obtaining data

The resulting statements and DQOs are summarized in the following:

1	Problem	The problem statement is that data gaps have been identified that would progress the design of both the extraction, treatment, and discharge system as well as the monitoring programs for the Albuquerque Products Terminal.
2	Goal	The goal is to collect the necessary data to acquire the data necessary to update the Conceptual Site Model (CSM) to support the groundwater remedial design to be submitted in a revised Intermediate (60%) GWRDR, and the design of the performance and long-term groundwater monitoring program.
3	Inputs	Inputs include the acquisition of required new data related to the proposed activities as presented in the Work Plan.
4	Boundaries	The boundaries include soil and groundwater within 750 feet of the Albuquerque Products Terminal to bedrock. Lithological logging, sampling, testing, analyzing, aquifer testing, and reporting will be performed within an estimated 14-month period.
5	Analytical Approach	The analytical approach is to generate usable data in accordance with the QAPP to address identified data gaps related to both the extraction, treatment, and discharge system as well as the monitoring programs for the Albuquerque Products Terminal.
6	Acceptance Criteria	The laboratory acceptance criteria are presented in this QAPP for Work Plan activities to generate validated data to address identified data gaps related to both the extraction, treatment, and discharge system as well as the monitoring programs for the Albuquerque Products Terminal.
7	Plan	The plan for collection activities is presented in the Work Plan.

#### 2.8.2 Measurement Performance Criteria

The measurement performance criteria for precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) are provided in the following subsections.

#### 2.8.2.1 Field Precision Criteria

Precision of the field sample collection procedures will be assessed by the analysis of field duplicate samples. Field duplicate samples will be collected at a frequency of 1 per 20 or fewer investigative samples or at a minimum frequency of 1 per sampling event. The samples will be labeled such that



the field duplicate sample is "blind" to the laboratory. A relative percent difference (RPD) of 100 percent for soil and 50 percent for groundwater samples will be used as the acceptance limit for analytes detected in both the investigative and field duplicate samples at concentrations greater than or equal to five times their quantitation limits.

Field precision for field measurements will be assessed through replicate measurement of the same sample, as applicable to the parameter being measured. The precision acceptance criteria for field measurements will be an RPD of 10 percent or less.

#### 2.8.2.2 Laboratory Precision Criteria

Laboratory precision will be assessed through the calculation of RPDs for laboratory duplicate sample analyses. These will be matrix spike/matrix spike duplicate (MS/MSD) and/or laboratory control samples/laboratory control sample duplicates (LCS/LCSD). The equation to be used to determine precision is presented in Section 5.3.1 of this QAPP. Laboratory precision acceptance criteria will be generated by the laboratory and included in the laboratory reports.

#### 2.8.2.3 Field Accuracy Criteria

The criteria for accuracy of the field sample collection procedures will be to ensure that samples are not affected by sources external to the sample, such as inadequate equipment decontamination procedures or sample contamination by ambient conditions or sample cross-contamination. Field sampling accuracy will be assessed using the data from equipment blank samples.

Field equipment blank samples will be collected at a minimum frequency of 1 per 10 sampling equipment decontamination procedures with a minimum frequency of one per sampling event during which equipment decontamination occurs. Field equipment blank samples (hereafter referred to as equipment blank samples) will be collected by routing laboratory-provided deionized water through decontaminated sampling equipment for the same parameters being analyzed for the investigation collection activities. The samples will be labeled such that the equipment blank sample is "blind" to the laboratory. Equipment blank samples will be analyzed to check for procedural contamination or ambient conditions that may cause sample contamination.

Equipment blank samples should not contain target analytes. The equipment sample data will be evaluated using the procedures specified in Section 5.3.2 of this QAPP. Accuracy also will be ensured by adhering to all sample handling procedures, sample preservation requirements, and holding time periods.

Trip blanks for Volatile Organic Compounds (VOCs) will be prepared by the laboratory using analyte-free water and submitted with the groundwater sample collection containers. The trip blanks will be kept unopened in the field with sample bottles. One trip blank will be transported to the laboratory with each cooler of aqueous VOC samples. The laboratory will analyze trip blanks as samples.

Accuracy of field measurements will be assessed by analyzing calibration check samples, as applicable to the parameter being measured.



#### 2.8.2.4 Laboratory Accuracy Criteria

Laboratory accuracy will be assessed by determining percent recoveries from Laboratory Control Sample (LCS) analyses. An LCS will be analyzed at a frequency of 1 per laboratory batch of 20 or fewer samples of the same matrix. Accuracy relative to the sample matrix will be assessed by determining percent recoveries from the analysis of matrix spike (MS) samples. The equation to be used to determine accuracy for this project is presented in Section 5.3.2 of this QAPP. Laboratory accuracy acceptance criteria will be generated by the laboratory and included in the laboratory reports.

The accuracy of all organic analyses also will be monitored through the analysis of surrogate compounds. Surrogate compounds are added to each sample, standard, blank, and QC sample prior to sample preparation and analysis. Surrogate compounds are not expected to be found occurring naturally in the samples but behave analytically similar to the compounds of interest. Consequently, surrogate compound percent recovery data will provide information on the effect that the sample matrix exhibits on the accuracy of the analyses. Surrogate compound percent recovery acceptance criteria will be generated by the laboratory and included in the laboratory reports.

#### 2.8.2.5 Field Representativeness Criteria

Representativeness is dependent upon the proper design of the sampling program. The representativeness criteria for field sampling will be to ensure that the correct locations are sampled and that the proper sampling procedures are followed. The sampling program was designed to provide data representative of conditions at the Site. During development of the sampling program, consideration was given to existing analytical data and physical setting.

#### 2.8.2.6 Laboratory Representativeness Criteria

The representativeness criteria for laboratory data will be to ensure that the proper analytical procedures are used for sample preparation, sample analysis, and that sample holding times are met. Additionally, the accuracy and precision of the laboratory data affect representativeness. The laboratory representativeness criteria will include achieving the accuracy and precision criteria for the sample analyses.

#### 2.8.2.7 Field Comparability Criteria

The criteria for field comparability will be to ensure and document that the proper sampling procedures are followed.

#### 2.8.2.8 Laboratory Comparability Criteria

The criteria for laboratory data comparability will be to ensure that the analytical methods used for the investigation are comparable to the methods used for previous sampling events, as applicable. The methods identified in Section 3.3.2 of this QAPP are the same or comparable to the methods used to generate previous data.



#### 2.8.2.9 Field Completeness Criteria

The criterion for field completeness will be 90 percent or more of the field-measured data to ensure that the data are usable. The procedure for determining field data usability is provided in Section 3.9.2 of this QAPP. The equation for calculating completeness is presented in Section 5.3.4 of this QAPP.

#### 2.8.2.10 Laboratory Completeness Criteria

The criteria for laboratory completeness will be 90 percent or more of the laboratory data are determined to be usable for the intended purpose. The procedure for determining laboratory data usability is provided in Section 3.9.2 of this QAPP. The equation for calculating completeness is presented in Section 5.3.4 of this QAPP.

#### 2.8.2.11 Field Sensitivity Criteria

Sensitivity is the measure of the concentration at which an analytical method can positively identify and report analytical results. The sensitivity of a given method is commonly referred to as the detection limit. The sensitivity criteria for field measurement will be in accordance with manufacturer specification.

#### 2.8.2.12 Laboratory Sensitivity Criteria

The sensitivity criteria for the laboratory analyses are the targeted reporting limits provided in Table 2.2 of this QAPP. Targeted quantitation limits have been set to meet the IRODA cleanup levels, when available, for the specified analytes as presented in Table 2.2.

It should be noted that high concentration of target and non-target analytes and matrix interferences may prevent the targeted quantitation limits from being achieved for all samples. The methods selected for analyzing the samples are EPA methods routinely used to support environmental investigations and data gathering activities.

#### 2.9 Special Training/Certification Requirements

Field sampling team members are required to have successfully completed relevant field training protocols and to follow the Health and Safety Plan including sections related to phosphine (Sections 6.1.4, 8.2.3, and 9.2.2). They are also required to have received the 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) safety training and annual 8-hour refresher courses required by 29 Code of Federal Regulations (CFR) Parts 1910 and 1926. Employee training documentation is maintained by the consultant conducting the sampling event.

Laboratory personnel training records are maintained by the laboratory. The laboratory is required to be accredited by the NELAP to demonstrate compliance with EPA's requirement that the laboratory have a documented quality system that complies with American National Standards Institute/American Society for Quality Control (ANSI/ASQC) E4-94 ("Specifications and Guidelines for Quality System for Environmental Data Collection and Environmental Technology Programs", January 1995), and EPA QA/R-2 ("EPA Requirements for Quality Management Plans", March 2001). The laboratory is accredited by NELAP for the analyses identified in this QAPP.



#### 2.10 Documentation and Records

The documents, records, and reports generated during the investigation activities are identified in the following subsections. The GHD Project Manager will ensure the most current version of the QAPP is available prior to each sampling event.

#### 2.10.1 Field and Laboratory Records

Documents and records generated during the project include sample collection records, QC sample records, laboratory records, and data handling records. A brief description of these documents and records are provided below. Detailed information on these records is provided in subsequent sections of this QAPP.

Sample collection records that will be used during the program's sampling activities include field logbooks and/or project standard field forms, stratigraphic logs, chain of custody records, field narratives, and shipping papers.

QC sample records that will be used during the project to document the generation of QC samples include field logbooks and/or project standard field forms recording field blank samples, and field duplicate samples. The laboratory will maintain quality records for deionized water sent for trip blanks or sent for field blank samples and sample integrity information. Records of sample preservation will be maintained in field logbooks and/or on project standard field forms and by the laboratories.

Field measurements of depth to water, pH, temperature, conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), turbidity and sample appearance will be recorded in field logbooks and/or on project standard field forms. Calibration data, where applicable, will also be recorded in these logbooks and/or on project standard field forms.

Laboratory records that will be maintained for the project include sample receipt documentation, laboratory narratives, field and laboratory chain of custody documentation, sample container cleanliness certifications, reagent and standard reference material certifications, sample preparation records, sample analysis records (i.e., run logs), instrument/raw data, QC data, calibration data, corrective action reports, and final reports.

Data handling records that will be maintained include verification of computer programs used to manipulate or reduce raw data into final results and data validation reports. The laboratory will maintain documentation of data verification and reduction procedures as necessary for the analyses used during the investigation. GHD will maintain checklists, notes, and reports generated during the external data validation process.

#### 2.10.2 Data Reporting Format

Field data will be recorded in field logbooks and/or on project standard field forms. The details for recording field data are provided in Section 2.10.1 of this QAPP. Field data will be generated primarily from observations. This information will be included in project reports or submittals.



Laboratory reports for the sampling and monitoring activities will include the following data deliverables:

- 1. Case narrative for each analyzed batch of samples
- 2. Cross referencing of laboratory sample to project sample identification numbers
- 3. Description of data qualifiers to be used
- 4. Methods of sample preparation and analyses for samples
- 5. Sample results
- 6. Raw data for sample results and laboratory QC samples
- 7. Results of (dated) initial and continuing calibration checks and Gas Chromatography/Mass Spectrometry (GC/MS) tuning results
- 8. MS/MSD recoveries, LCS, method blank results, surrogate recoveries, calibration check compounds and system performance check compound results (organics)
- 9. MS recoveries and matrix duplicate RPDs, LCS, serial dilutions, method blank results, and reagent blank results (inorganics)
- 10. Labeled and dated chromatograms/spectra of sample results and laboratory QC checks

The data package submitted will be an EPA "Contract Laboratory Program-like (CLP-like)" data package consisting of all the information presented in a CLP data package but not necessarily on CLP forms.

Method detection limit (MDL) studies and method performance and validation studies will be maintained by the laboratory.

#### 2.10.3 Data Archiving and Retrieval

All records will be maintained consistent with the laboratory's and GHD's record retention policies.

### 3. Data Generation and Acquisition

The design and implementation of the measurement systems that will be used during the investigation activities, including sampling procedures, analytical procedures, and data handling and documentation, are detailed in the following subsections.

#### 3.1 Sampling Process Design

The rationale for the sampling program is described in the work plan.



#### 3.1.1 Sampling Methods

Sample collection methods are provided in the Work Plan. The following SOPs are provided in Appendix D (Field Sampling Plan), Attachment A.

- SOP 1 Aquifer Testing
- SOP 2 Decontamination
- SOP 3 Depth Discrete Groundwater Sample Collection
- SOP 4 Investigative Derived Waste
- SOP 5 Monitor Well Groundwater Sampling
- SOP 6 Soil Classification
- SOP 7 Surveying
- SOP 8 Utility Clearance
- SOP 9 Well and Piezometer Installation
- SOP 10 Hydraulic Load Testing

#### 3.1.2 Field Equipment and Sample Container Cleaning Procedures

Equipment cleaning/decontamination procedures are provided in the SOPs. Sample containers will be provided by the laboratories. All containers will be pre-cleaned in accordance with the EPA guidance document entitled "Specifications and Guidance for Contaminant-Free Sample Containers", EPA 540/R-93/051. Certificates of analysis for each lot of containers will be maintained by the laboratory or be available from the vendor upon request.

#### 3.1.3 Field Equipment Maintenance, Testing, and Inspection Requirements

Field equipment will be inspected and tested prior to use in the field. Maintenance logs for all field equipment are recorded in the field logbooks or kept in field equipment files located with the consultant conducting the sampling event. Prior to use in the field, the equipment is checked again, and the performance information is recorded in the field logbook and/or on a standard field equipment form. All equipment returned from the field is inspected and tested. Any required maintenance is performed and documented prior to the equipment being returned to service.

Critical spare parts for field equipment and replacement field equipment are available and can be delivered to the field when the need is identified. Alternately, field equipment vendors can provide replacement equipment if needed. The replacement equipment can be shipped for overnight delivery as necessary.

# 3.1.4 Inspection and Acceptance Requirements for Supplies and Sample Containers

The field supplies for the investigation consist of detergent (Alconox) for equipment cleaning, distilled water for sample collection equipment rinsing, deionized water for final sample collection



equipment rinsing and for collecting equipment rinsate blank samples, and sample containers to collect the samples.

Alconox, a standard laboratory-grade detergent, and distilled water will be purchased as needed from a variety of vendors.

Deionized water and sample containers will be provided by the laboratory. The laboratory will maintain documentation of the purity/cleanliness for these materials. The laboratory QA Officer is ultimately responsible for ensuring these materials are acceptable for the project. The acceptability of these materials for use will be evaluated by reviewing lot analysis certificates (deionized water and containers). Water and containers that do not meet the laboratory's acceptability requirements will not be shipped to the field.

#### 3.2 Sample Handling and Custody Requirements

The procedures for sample handling, labeling, shipping, and chain of custody documentation are provided in the subsections that follow.

#### 3.2.1 Sample Handling

The procedures used to collect the samples are provided in the SOPs. Table 3.1 identifies the requirements for the number of containers, container volume, container type, preservation, holding time periods, and shipping for the analyses. The sample identification procedure is as follows:

Example: S-002428-062016-DJT-XXX

Where:

=	Designates sample matrix (S – Soil, GW – Groundwater, SW – Surface Water)
=	GHD project number (same project number as used in logbooks and on sample
	forms)
=	Date of collection (mm,dd,yy)
=	Sampler initials
=	Unique sample number

Unique sequential sample numbers will be assigned to samples. Sample identifications, sample locations, and sample depths will be recorded in the field logbook or field forms.

Samples will be placed in shipping coolers containing bagged, cubed ice immediately following collection. The samples will be grouped in the shipping cooler by the order in which the samples are collected, and then shipped to the laboratory via laboratory courier, hand delivery by GHD, or by an overnight courier service, generally on the day they are collected. The only exceptions to this procedure will be for samples collected after the courier service has picked up the shipment for the day and when samples are collected on a Sunday or holiday. In these instances, the samples will be shipped on the next business day.



#### 3.2.2 Sample Custody

Chain of custody is the sequence of possession of an item. An item (such as a sample or final evidence file) is considered to be in custody if the item is in actual possession of a person, the item is in the view of the person after being in his/her actual possession, or the item was in a person's physical possession but was placed in a secure area by that person. Field, laboratory, and final evidence files custody procedures are described in the subsections that follow.

#### 3.2.2.1 Field Custody Procedures

Logbooks and/or project standard field forms will be used to record field data collection activities. Entries will be described in as much detail as possible to ensure that a particular situation could be reconstructed solely from these entries. Field logbooks are bound field survey books or notebooks with consecutively numbered pages. Logbooks will be assigned by project and will be stored with the consultant conducting the sampling event when not in use. Each logbook will be identified by a project-specific document number. The project number required in the logbooks and on the field forms will correspond to the project number in the sample identification procedure in Section 3.2.1.

The title page of each logbook will contain the following information:

- Project name
- Project number
- Project start date
- End date

Entries into the logbook will contain a variety of information. At the beginning of each day's logbook entry, the date, start time, weather, names of all sampling team members present, and the signature of the person making the entry will be entered. The names of individuals visiting the Site or field sampling team and the purpose of their visit will also be recorded in the field logbook.

All field measurements obtained and sample collection information will be recorded in a logbook and/or on a project standard field form. Project standard field forms are specifically prepared for each project sampling location. These forms are used to record all field measurements/information obtained and samples collected for each location. All entries will be made in ink, signed, and dated with no erasures. If an incorrect entry is made, the incorrect information will be crossed out with a single strike mark. The correct information will be entered adjacent to the original entry.

Whenever a sample is collected, an identification and a detailed description (if necessary) of the location will be recorded in the logbook and/or on a project standard field form. Photographs taken at a location, if any, will be noted in the logbook. All equipment used to obtain field measurements will be recorded in the field logbook and/or on a project standard field form. In addition, the calibration data for all field measurement equipment will be recorded in the field logbook or on standard field forms.

Samples will be collected according to the sampling procedures documented in the work plan. The equipment used to collect samples, time of sample collection, sample description, volume and number of containers, and preservatives added (if applicable) will be recorded in the field logbook



and/or on a project standard field form. A deviation from the work plan, QAPP, or other project-appropriate planning document sampling procedures will be documented in the field logbook and/or on a project standard field form. Each sample will be uniquely identified using the sample identification system provided in Section 3.2.1.

Figure 3.1 illustrates an example chain of custody form. The sample packaging and shipping procedures summarized below will ensure that the samples arrive at the laboratory with the chain of custody intact:

- 1. The field sampler is personally responsible for the care and custody of the samples until they are transferred to another person or the laboratory. As few people as possible will handle the samples.
- 2. All sample containers will be identified by using sample labels that include the sampler's initials, sample name, date and time of collection, and analyses to be performed. Sample labels will be completed for each sample using waterproof ink and will be placed on the sample container.
- 3. Samples will be accompanied by a properly completed chain of custody form. The sample identification numbers and required analyses will be listed on the chain of custody form. When transferring the possession of samples, the individuals relinquishing and receiving the samples will sign and record the date and time on the form. The chain of custody form documents sample custody transfers from the sampler to another person, to the laboratory, or to/from a secure storage area.
- 4. Samples will be properly packaged for shipment and dispatched to the laboratory for analysis with a separate signed chain of custody form enclosed in and secured to the inside top of each shipping cooler. Shipping coolers will be secured with custody seals for shipment to the laboratory. The custody seal is then covered with clear plastic tape to prevent accidental damage to the custody seal.
- 5. If samples are split with a government agency or other entity, it is the responsibility of that entity to prepare its own chain of custody form for the samples. Information regarding the identity of the entity and the sample(s) that are being split will be recorded in the field logbook.
- 6. All sample shipments will be accompanied by the chain of custody form identifying its contents. The chain of custody form is a four-part carbonless-copy form. The form is completed by the sampling team which, after signing and relinquishing custody to the shipper, retains the bottom (goldenrod) copy. The shipper, if different than the sampling team members, retains the pink copy after relinquishing custody to the laboratory. The yellow copy is retained by the laboratory, and the fully executed white copy is returned as part of the data deliverables package.
- 7. If the samples are sent by common carrier, a bill of lading (i.e., FedEx air bill) will be used and copies will be retained as permanent documentation. Commercial carriers are not required to sign the chain of custody form provided the form is sealed inside the sample cooler with the custody tape intact.



#### 3.2.2.2 Laboratory Custody Procedures

Laboratory sample custody begins when the samples are received at the laboratory. The laboratory sample custodian will assign a unique laboratory sample identification number to each incoming sample. The field sample identification numbers, laboratory sample identification numbers, date and time of sample collection, date and time of sample receipt, and requested analyses will be entered into the sample receiving log. The laboratory's sample log-in, custody, and document control procedures will be consistent with its standard operating procedure.

Following log-in, all samples will be stored within an access-controlled location and will be maintained properly preserved (as defined in Table 3.1) until completion of all laboratory analyses. Unused sample aliquots and sample extracts will be maintained properly preserved for a minimum of 30 days following receipt of the final report by GHD. The laboratory will be responsible for the disposal of unused sample aliquots, sample containers, and sample extracts in accordance with all applicable local, state, and federal regulations.

The laboratory will be responsible for maintaining analytical logbooks and laboratory data.

#### 3.2.2.3 Final Evidence Files Custody Procedures

The final evidence file for the project will be maintained by GHD and will consist of the following:

- 1. Project plans
- 2. Project logbooks
- 3. Field data records
- 4. Sample identification documents
- 5. Chain of custody records
- 6. Correspondence
- 7. References, literature
- 8. Final data packages
- 9. Miscellaneous photos, maps, drawings, etc.
- 10. Reports

The final evidence file materials will be the responsibility of the evidentiary file custodian with respect to maintenance and document removal.

#### 3.3 Analytical Method Requirements

The field and laboratory analytical methods that will be used during the investigation are detailed in the following subsections.

#### **3.3.1 Field Analytical Methods**

Field measurements obtained during monitoring well purging include pH, temperature, conductivity, DO, turbidity, and ORP. This data will be used to determine when groundwater is suitable for the



collection of representative samples, as applicable to the Work Plan. Field-portable meters will be used to analyze the samples.

#### 3.3.2 Laboratory Analytical Methods

The analytical methods that will be used are presented in Table 3.2. The frequency and types of QC samples to be collected are included in Table 2.1.

The turnaround time required for the analyses required for each batch of samples will be noted on the chain of custody documents submitted with the samples and will be communicated to the laboratory prior to the sampling event, as necessary.

### 3.4 Quality Control Requirements

The field and laboratory QC requirements for the investigation are discussed in the following subsections. Specific QC checks and acceptance criteria are provided in the referenced analytical methods.

#### 3.4.1 Field Sampling Quality Control

Field QC requirements include analyzing reference standards for instrument calibration and for routine calibration checks. Field QC samples for this project include equipment and trip blank samples to determine the existence and magnitude of sample contamination resulting from sample containers, ambient conditions, or sampling procedures and field duplicate samples to assess the overall precision of the sampling and analysis event. The frequency of collection of these field QC samples is summarized in Table 2.1 of this QAPP. The evaluation of field QC data is provided in Section 3.9.2 of this QAPP.

#### 3.4.2 Analytical Quality Control

The laboratory QC requirements for the analyses include analyzing method blanks, instrument performance checks, initial calibration standards, calibration verification standards, internal standards, surrogate compound spikes, and LCS. The acceptance criteria for LCS and surrogate compounds will be generated by the laboratory and included in the laboratory reports. The analysis frequency and acceptance criteria for the remaining QC checks will be consistent with the referenced methods in Table 3.2.

# **3.5 Instrument/Equipment Testing, Inspection, and Maintenance Requirements**

The procedures used to verify that instruments and equipment are functional and properly maintained are described in the following subsections.

#### 3.5.1 Field Instrument Maintenance

The field equipment for this project includes water level, pH, temperature, conductivity, DO, turbidity, and ORP meters. Specific preventive maintenance procedures to be followed for field



equipment are those recommended by the manufacturer. Field instruments will be checked and calibrated daily before use, as applicable.

#### 3.5.2 Laboratory Instrument Maintenance

As part of its QA/QC program, the laboratory conducts routine preventive maintenance to minimize the occurrence of instrument failure and other system malfunctions. Designated laboratory employees will regularly perform routine scheduled maintenance and repair of (or coordinate with the instrument manufacturer for the repair of) all instruments. All maintenance that is performed will be documented in the laboratory's maintenance logbooks. All laboratory instruments are maintained in accordance with manufacturer's specifications. Table 3.3 provides examples of the frequency at which components of key analytical instruments or equipment will be serviced.

### 3.6 Calibration Procedures and Frequency

The procedures for maintaining the accuracy for all the instruments and measuring equipment that will be used for conducting field sampling and laboratory analyses are described in the following subsections. These instruments and equipment will be calibrated prior to each use or according to a periodic schedule.

#### 3.6.1 Field Instruments/Equipment

Instruments and equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications.

Equipment to be used during field sampling will be examined to confirm that it is in operating condition. This includes checking the manufacturer's operating manual for each instrument to ensure that all maintenance requirements are being observed. Individual calibration records for each field instrument that will be used for the project will be reviewed to ensure that any prior equipment problems have not been overlooked and all necessary repairs to equipment have been completed.

#### 3.6.2 Laboratory Instruments

Calibration of laboratory equipment will be based on approved written procedures. Records of calibration, repairs, or replacement will be filed and maintained by the designated laboratory personnel performing these QC activities. These records generally will be filed at the location where the work is performed and will be subject to a QA audit. The laboratory will have trained staff and in-house spare parts available for instrument repair or will maintain service contracts with vendors. Specific calibration procedures and frequencies are detailed in the referenced method.

#### 3.7 Inspection/Acceptance Criteria for Supplies and Consumables

The procedures that will be used to ensure that supplies and consumables used in the field and laboratory will be available as needed and free of contaminants are detailed in the following subsections.



#### 3.7.1 Field Supplies and Consumables

Supplies and consumables for field sampling will be obtained from various vendors and include sample containers, detergent and water for equipment decontamination, and field blank water. The vendors and inspection and acceptance criteria for these field supplies were presented in Section 3.1.4 of this QAPP. Additional field supplies and consumables may include pump tubing and personal protective equipment. Pump tubing will be constructed of pre-cleaned high density polyethylene (or equivalent acceptable tubing). These materials will not introduce contaminants into the samples or interfere with the analyses. All field supplies will be consumed or replaced with sufficient frequency to prevent deterioration or degradation that may interfere with the analyses.

#### 3.7.2 Laboratory Supplies and Consumables

The laboratory's vendors for general labware and reagents may include VWR Scientific Products and Fisher Scientific. Vendors for chromatography supplies and organic standards may include Ultra Scientific, Supelco, Accustandard, Restek, ChemService, Cambridge Isotopes, and Aldrich Chemical. The lot numbers of reagents and standards will be recorded and dates of receipt, first use, and expiration will be documented by the laboratory. Certificates of analysis will be maintained on file to document reagent/standard purity.

The referenced methods provide details on identifying contaminants in reagents and standards, determining deterioration of reagents and standards, and the corrective actions required if contaminants or deterioration are identified. The laboratory QA Officer is ultimately responsible for the ensuring the acceptability of supplies and consumables.

#### **3.8 Data Acquisition Requirements (Non-Direct Measurements)**

Data generated during the investigation are verified and validated. These data then will be submitted in the required reports to the client and the applicable regulatory agency. Data from other sources are not required for this investigation.

#### 3.9 Data Management

The procedures for managing data from generation to final use and storage are detailed in subsections that follow.

#### 3.9.1 Data Recording

Field information will be recorded in field logbooks and/or on project standard field forms and consists of measurements from direct reading instruments or direct measurements. Field staff is responsible for recording field data and the Field QA Officer is responsible for identifying and correcting recording errors.

Laboratory data are recorded in a variety of formats. Data from instruments are recorded on magnetic media, strip charts, or bench sheets. The referenced methods provide the data recording requirement for each preparation and analysis method.



#### 3.9.2 Data Validation

Validation of field data for this project will primarily consist of checking for transcription errors and reviewing information recorded in field logbooks. Data transcribed from the field logbook into summary tables for reporting purposes will be verified for correctness by the Field QA Officer or designee. Any limitations on the use of field data will be identified in the required reports to client and/or regulatory agency.

The data assessment will include a review of all technical holding times, instrument performance check sample results, initial and continuing calibration results, and all batch and matrix QC including equipment blanks, field duplicates, MS/MSD, laboratory duplicates, surrogate recoveries, method blanks, LCS results, continuing and initial calibration checks, and the identification and quantitation of specific analytes of interest. Assessment of analytical and in-house data will include checks on data consistency by looking for comparability of duplicate analyses, adherence to accuracy and precision control criteria detailed in this QAPP and anomalously high or low parameter values. The results of these data validations will be reported to the project manager, noting any discrepancies and their effect upon acceptability of the data.

The evaluation and action criteria specified in these documents (referred to hereafter as the National Functional Guidelines) will be used for validating the data. Data validation reports will summarize the samples reviewed, parameters reviewed, any nonconformance with the established criteria, and validation actions (including data qualifiers). Qualifiers assigned to the data will be consistent with the data qualifiers specified in the National Functional Guidelines.

#### 3.9.3 Data Transformation/Data Reduction

Field data reduction procedures will be minimal in scope compared to those implemented for laboratory data. Only direct reading instrumentation will be employed in the field, if needed. The use of field instruments will generate data read directly from the meters following calibration. These data will be recorded into field logbooks and/or on project standard field forms immediately after the measurements are obtained.

Laboratory data reduction consists of producing the final results from raw data. The procedures, calculations, and specific equations used by the laboratory for data reduction are detailed in the referenced methods.

#### 3.9.4 Data Transmittal/Transfer

Field data will be entered into a standard spreadsheet format. The Field QA Officer is responsible for verifying the correctness of the field data after the data are transferred to a spreadsheet format.

The laboratories will provide data in electronic format as electronic data deliverables (EDDs) that are compatible with EarthSoft's EQuIS database product, which is GHD's database for chemistry and geographical data. EDDs are generated directly from the laboratory information management system (LIMS), thereby eliminating the possibility of manual transcription errors. Laboratory EDDs are imported into the EQuIS database, and the data are maintained in the database for manipulation and presentation.



GHD's QA Officer is responsible for verifying the correctness of the analytical database after the laboratory data for each event have been imported. This is accomplished by comparing the data from the database to the hard copy analytical reports for a minimum of 10 percent of the sample results. If discrepancies between the database and analytical reports are detected, a complete verification of the database will be performed or a new EDD will be submitted, imported, and verified as described previously.

#### 3.9.5 Data Analysis

Groundwater data will be analyzed to determine flow direction, contours, and concentration gradients. It is anticipated that commercially-available Geographical Information System (GIS) and contouring software will be used to facilitate the evaluation/visualization of the data. The actual software used and input parameters/assumptions will be identified in project reports, as necessary. There is no extreme or unique computer hardware required to use these software programs.

#### 3.9.6 Data Assessment

Assessment of laboratory data will be performed using the procedures detailed in the analytical methods. These assessments included determining the mean, standard deviation, relative standard deviation, percent difference, RPD, and percent recovery for certain QC elements.

Assessment of QC data for data validation purposes will include determining the percent recovery, RPD, and percent completeness. The statistical equations to determine these parameters are provided in Section 5.3 of this QAPP.

#### 3.9.7 Data Tracking

Data generated in the field, such as water level measurements, will be recorded in field logbooks and/or on project standard field forms. There are no unique or special tracking requirements for these data. The data will be transcribed for analysis and reporting as discussed in Section 3.9.4, and the field logbooks and forms will be maintained in the final evidence file.

The laboratory's LIMS will provide the means for tracking data in the laboratory. The Laboratory Director is ultimately responsible for data tracking in the laboratory.

Tracking of analytical data in GHD's database includes recording the laboratory generating the data, the date when the EDD was received and imported, the date when qualifiers were applied to the results, the level of data review performed, and the data review guidance used to evaluate the data. GHD's Project Manager is ultimately responsible for tracking data from entry to reporting.

#### 3.9.8 Data Storage and Retrieval

Laboratory data will be stored in hard copy and/or electronic format for a minimum period of 5 years. Electronic instrument data will be maintained for this same time period. All laboratory records for this project will be maintained consistent with the storage requirements stated in Section 2.10.3 of this QAPP.



GHD's Project Manager is responsible for project data storage and retrieval. Final evidence files, which will include a copy of all laboratory data, will be maintained by GHD in secure on-Site or off-Site storage.

#### 3.9.9 Data Security

Laboratory data security is the responsibility of the Laboratory Director. Archived data cannot be accessed without authorization, and the name and purpose of personnel accessing archived data are recorded. The laboratory's LIMS is password protected and access rights are restricted by job function. GHD's data security procedures include limiting project database access to database managers and analysts, in addition to general building security procedures.

## 4. Assessment/Oversight

The following subsections describe the procedures used to ensure proper implementation of this QAPP and the activities for assessing the effectiveness of the implementation of the project and associated QA/QC activities.

### 4.1 Assessments and Response Actions

Assessments consisting of internal and external audits may be performed during the project. Internal technical system audits of both field and laboratory procedures will be conducted to verify that sampling and analysis are being performed in accordance with the procedures established in the work plan and QAPP.

An internal field technical system audit of field activities will be conducted by the Field QA Officer or designee at the beginning of the field sampling activities to identify deficiencies in the field sampling and documentation procedures. The field technical system audit will include examining field sampling records and chain of custody documentation. In addition, sample collection, handling, and packaging in compliance with the established procedures will be reviewed during the field audit. Any deficiencies identified will be documented and corrective actions will be taken to rectify the deficiencies.

Corrective action resulting from internal field technical system audits will be implemented immediately if data may be adversely affected from the use of unapproved methods or the improper use of approved methods. The Field QA Officer will identify deficiencies, if any, and recommend corrective action. Implementation of corrective actions will be performed by the Field QA Officer and field team. Corrective action will be documented in the field logbook and/or the project file. Follow-up audits will be performed as necessary to verify that deficiencies have been corrected and that the QA/QC procedures described in this QAPP and the work plan are maintained throughout the project.

An internal laboratory technical system audit will be conducted by the laboratory's QA Officer or designee. The laboratory technical system audit typically is conducted on a biannual basis and includes examining laboratory documentation regarding sample receiving, sample log-in, storage and tracking, chain of custody procedures, sample preparation and analysis, instrument operating



records, data handling and management, data tracking and control, and data reduction and verification. The laboratory's QA Officer will evaluate the results of the audit and provide a report to section managers and the Laboratory Director that includes any deficiencies and/or noteworthy observations.

Corrective action resulting from deficiencies identified during the internal laboratory technical system audit will be implemented immediately. The Laboratory Director or section leaders, in consultation with the laboratory supervisor and staff, will approve the required corrective action to be implemented by the laboratory staff. The laboratory QA/QC Officer will ensure implementation and documentation of the corrective action. All problems requiring corrective action and the corrective action taken will be reported to the laboratory Project Manager. Follow-up audits will be performed as necessary to verify that deficiencies have been corrected.

External laboratory audits, if conducted, may include, but not be limited to, reviewing laboratory analytical procedures, laboratory on-Site audits, and/or submitting performance evaluation (PE) samples to the laboratory for analysis.

### 4.2 Reports to Management

Quality assurance information will be summarized following completion of the investigation activities. This information will consist of the results of external PEs, results of periodic data quality validation and assessment, data use limitations, and any significant QA problems identified and corrective actions taken.

GHD's QA Officer will be responsible within the organizational structure for compiling this information. GHD's Project Manager will be provided with this information, to be included, as appropriate, in required reports to the EPA.

## 5. Data Verification/Validation and Usability

The QA activities that will be performed to ensure that the data are scientifically defensible, properly documented, of known quality, and meet the project objectives are described in the following sections.

#### 5.1 Data Review, Verification, and Validation Requirements

All field and laboratory data will be reviewed, verified, and validated. These terms are defined as follows:

- Data review is the in-house examination to ensure that the data have been recorded, transmitted, and processed correctly
- Data verification is the process for evaluating the completeness, correctness, and conformance/compliance of a specific data set against the method, procedural, or contractual specifications



• Data validation is an analyte and sample-specific process that extends the evaluation of data beyond method, procedure, or contractual compliance (i.e., data verification) to determine the quality of a specific data set relative to the end use

The procedures and criteria used to verify and validate field and laboratory data are presented in Section 5.2. Field data and logbooks will be reviewed to ensure that the requirements of the sampling program, including the number of samples and locations, sampling, and sample handling procedures, were fulfilled.

Laboratory data review consists of raw data being reduced to results and checked by the responsible analyst. A second review of the data reduction procedure is conducted by another analyst or senior chemist. After the data are verified (see Section 5.2), a draft report is reviewed by the laboratory Project Manager. Final reports are generated, signed, and transmitted after approval of the draft by the Project Manager.

### 5.2 Verification and Validation Methods

Field data will be verified by reviewing field documentation and chain of custody records. Data from direct-reading field instruments will be verified by reviewing calibration and operating records and the QC data specified in Section 2.8.2 of this QAPP.

Verification of sample collection procedures consists of reviewing sample collection documentation for compliance with the requirements of the work plan and QAPP. If alternate sampling procedures were used, the acceptability of the procedure will be evaluated to determine the effect on the usability of the data. Data usability will not be affected if the procedure used is determined to be an acceptable alternative that fulfills the measurement performance criteria in Section 2.8.2 of this QAPP.

The laboratory will internally verify its data by reviewing and documenting sample receipt, sample preparation, sample analysis (including internal QC checks), and data reduction and reporting. Any deviations from the acceptance criteria, corrective actions taken, and data determined to be of limited usability (i.e., laboratory-qualified data) will be noted in the laboratory reports.

Verification of laboratory data conducted by GHD will consist of reviewing the final reports to ensure that the methods used to analyze the samples were consistent with the requirements of this QAPP. Sample handling records will also be reviewed to ensure that sample integrity remained intact from collection to laboratory receipt and that samples were properly preserved. Chain of custody documentation and sample condition upon laboratory receipt will be reviewed. Laboratory results, holding time periods, and QC data will be reviewed to determine compliance with the measurement performance criteria in Section 2.8.2 of this QAPP and the analytical methods.

Data validation will be conducted by GHD consistent with the procedure identified in Section 3.9.2 of this QAPP. The results of the data validation procedure will identify data that do not meet the measurement performance criteria in Section 2.8.2 of this QAPP. Data validation will determine whether the data are acceptable, of limited usability (qualified as estimated), or rejected. Data qualified as estimated will be reviewed and a discussion of the usability of estimated data will be included in the data validation report. The results of data verification/validation will be summarized



in data validation report provided to GHD's Project Manager for use in interpreting the results and for use in project reports.

Data determined to be unusable may require corrective action to be taken. Potential types of corrective action may include resampling by the field team or reanalysis of samples by the laboratory. The corrective actions taken are dependent upon the ability to mobilize the field team and whether or not the data are critical for project DQOs to be achieved. GHD's Project Manager will be responsible for approving the implementation of any corrective action deemed to be necessary during data verification/validation.

## 5.3 Usability/Reconciliation with Data Quality Objectives

The overall usability of the data for the investigation will be assessed by evaluating the PARCCS of the data set to the measurement performance criteria in Section 2.8.2 of this QAPP using basic statistical quantities, as applicable. The procedures and statistical formulas to be used for these evaluations are presented in the following subsections.

#### 5.3.1 Precision

Precision of field sampling procedures will be evaluated by assessing the RPD data from field duplicate samples. Analytical precision will be evaluated by assessing the RPD data from either duplicate spiked sample analyses or duplicate LCS analyses. The RPD between two measurements is calculated using the following simplified formula:

$$RPD = \frac{|R_1 - R_2|}{R_1 + R_2} X 200$$

Where:

 $R_1$  = Value of first result

 $R_2$  = Value of second result

RPD data will provide the means to evaluate the overall variability attributable to the sampling procedure, sample matrix, and laboratory procedures. It should be noted that the RPD of two measurements can be very high when the concentrations approach the quantitation limit of an analysis.

#### 5.3.2 Accuracy/Bias

The data from method blank samples, surrogate compound spikes, LCS, and MS will be used to determine accuracy and potential bias of the sample data.

The data from method blank samples provide an indication of laboratory contamination that may result in bias of sample data. Sample data associated with method blank contamination will have been identified during the data validation process. Sample data associated with method blank contamination are evaluated during the data validation procedure to determine if analytes detected in samples associated with contaminated method blanks are "real", or are impacted by laboratory contamination. The procedure for this evaluation involves comparing the concentration of the analyte in the sample to the concentration in the method blank sample taking into account



adjustments for sample preparation and dilution factors. In general, the sample data are qualified as non-detect "U" if both the sample and blank concentrations are less than the reporting limit or less than 2x the reporting limit for common laboratory contaminants (phthalates). The "U" qualifier indicates that the result is a laboratory artifact based on the method blank contamination.

The data from equipment and trip blank samples provide an indication of field conditions that may result in bias of sample data. Sample data associated with contaminated equipment blank samples will have been identified during the data validation process. The evaluation procedure and qualification of sample data associated with equipment contamination are performed in a similar manner as the evaluation procedure for method blank sample contamination.

MS sample data provide information regarding the accuracy/bias of the analytical methods relative to the sample matrix. MS samples are field samples that have been fortified with target analytes prior to sample preparation and analysis. The percent recovery data provide an indication of the effect that the sample matrix may have on the preparation and analysis procedure. Sample data exhibiting matrix effects will have been identified during the data verification/validation process.

Surrogate spike recoveries provide information regarding the accuracy/bias of organic analyses on an individual sample basis. Surrogate compounds are not expected to be found in the samples and are added to every sample prior to sample preparation. The percent recovery data provide an indication of the effect that the sample matrix may have on the preparation and analysis procedure. Sample data exhibiting matrix effects will have been identified during the data validation process.

Analytical accuracy/bias will be determined by evaluating the percent recovery data of LCS. LCS are artificial samples prepared in the laboratory using a blank matrix fortified with analytes from a standard reference material that is independent of the calibration standards. LCS are prepared and analyzed in the same manner as the field samples. The percent recovery data from LCS analyses will provide an indication of the accuracy and bias of the analytical method for each analyte or analyte group.

Percent recovery is calculated using the following formula:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

Where:

- SSR = Spiked Sample Result
- SR = Sample Result or Background
- SA = Spike Added

The percent recovery for surrogate compounds and LCS are determined by dividing the measured value by the true value and multiplying by 100.

Accuracy/bias will be determined by comparing the percent recovery data to the measurement performance criteria in Section 2.8.2 of this QAPP.



#### 5.3.3 Sample Representativeness

Representativeness of the samples will be assessed by reviewing sample holding times, the results of field audits, if conducted, and the data from field duplicate samples. Sample representativeness will be considered acceptable if holding time periods are met, the results of field audits indicate that the approved sampling methods or alternate acceptable sampling methods were used to collect the samples, and the field duplicate RPD data are acceptable.

#### 5.3.4 Completeness

Completeness will be assessed by comparing the number of valid (usable) sample results to the total possible number of results within a specific sample matrix and/or analysis. Percent completeness will be calculated using the following formula:

% Completeness =  $\frac{\text{Number of Valid (usable) measurements}}{\text{Number of Measurements Planned}}$  X 100

Completeness will be considered acceptable if 90 percent of the data are determined to be valid. However, valid sample data will not be rendered unusable if this completeness goal is not met. Formal corrective actions and additional sampling/analysis may be required when data quality results in a percentage less than the completeness goal. This will be addressed on a per event basis, in conjunction with the client and GHD.

#### 5.3.5 Comparability

The comparability of data sets will be evaluated by reviewing the sampling and analysis methods used to generate the data for each data set. Comparability will be determined to be acceptable if the sampling and analysis methods specified in this QAPP and any approved QAPP revisions or amendments are used for generating the data.

Comparability of data from split samples (samples that are collected at the same time from the same location and split equally between two parties using sample containers from the same source or vendor), if collected, will be evaluated by determining the RPD of detected analytes in both samples following data validation. Analytes that are detected in only one of the two samples will be assessed by reviewing the data validation reports for both data sets and determining the cause of the discrepancy, if possible. Comparability of split sample data will be considered acceptable if the RPD for detected analytes with concentrations greater than or equal to five times their respective quantitation limits does not exceed RPD acceptance criteria for field duplicate samples.

#### 5.3.6 Sensitivity and Quantitation Limits

Laboratory reports will include method reporting limits. These limits will be reviewed for the samples to ensure that the sensitivity of the analyses was sufficient to achieve the program requirements. All relevant QC data will be reviewed to assess compliance with the measurement performance criteria specified in Section 2.8.2 of this QAPP.

It should be noted that quantitation limits may be elevated as a result of high concentrations of target compounds, non-target compounds, and matrix interferences (collectively known as sample



matrix effects). In these cases, the sensitivity of the analyses will be evaluated on an individual sample basis relative to the applicable evaluation criteria.

#### 5.3.7 Data Limitations and Actions

Data use limitations will be identified in data validation reports. Data that do not meet the measurement performance criteria specified in this QAPP will be identified and the impact on the project quality objectives will be assessed and discussed in these reports and project reports. Field information will be reviewed to ensure that all sampling procedures were conducted in accordance with the requirements of this QAPP. Data from samples collected using procedures inconsistent with the requirements of this QAPP will be evaluated using the procedures in Section 5.1 of this QAPP. Specific actions for laboratory data that do not meet the measurement performance criteria depend on the use of the data and may require that additional samples are collected or the use of the data be restricted.

# Appendix C Site Specific Health and Safety Plan





# **Site-Specific Health and Safety Plan**

Albuquerque Products Terminal 6356 Desert Rd., Albuquerque, New Mexico

Phillips 66 Company

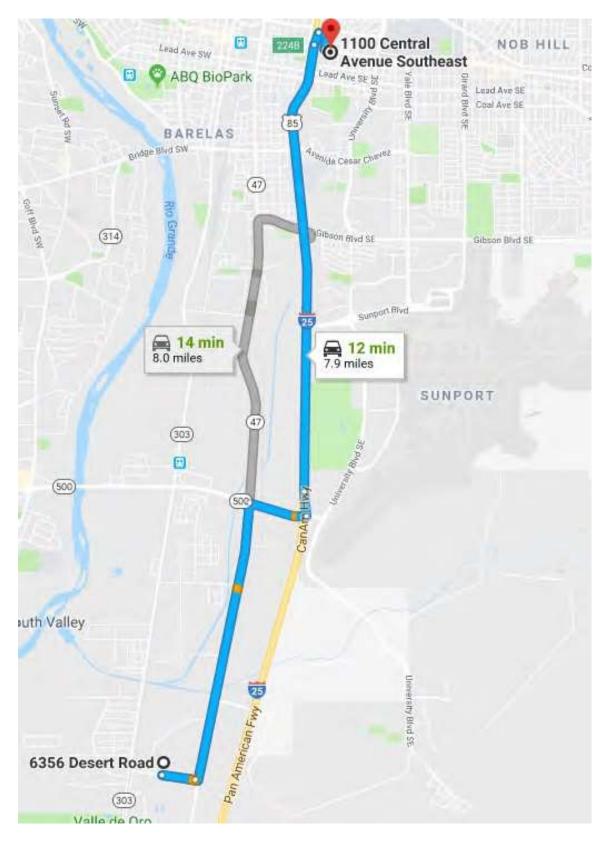
**GHD** | 14998 West 6th Avenue Suite 800 Golden Colorado 80401 USA 075015 Report No 1 Update November 29, 2017

# Emergency Contact List and Medical Facility Route Maps

Contact	Phone Number	Hospital/Occupational Clinic Directions
ocal Police Ibuquerque Police Department	911- Emergency 505-242-2677 (Direct to Dispatcher)	<ul><li>Hospital Directions:</li><li>See Attached</li></ul>
ire	911- Emergency 505-242-2677 (Direct to Dispatcher)	
mbulance	911- Emergency 505-242-2677 (Direct to Dispatcher)	
ocal Hospital: P <b>resbyterian Hospital</b>	505-841-1234	
100 Central Avenue Southeast Ibuquerque, NM 87106		
Occupational Clinic: Concentra	505-842-5151	<ul><li>Occupational Clinic Directions:</li><li>See Attached</li></ul>
101 Menaul Blvd NE Suite B Ibuquerque, NM 87107		
lational Poison Center	800-222-1222	
GHD Project Manager: Chrissi Ruby Work: Cell:	720-974-0969 720-737-7217	<ul> <li>GHD – Incident Reporting Hotline</li> <li>Please call (866) 529-4886 and provide:</li> <li>Name and location of caller</li> <li>Description of incident <ul> <li>Name of any injured persons</li> <li>Description of injuries</li> <li>Phone number for return call</li> </ul> </li> <li>Phillips 66 – Call P66 Program Manager. Mus make verbal contact. If not available, contact P66 RM Safety Director <ul> <li>Management/Emergency Notification:</li> <li>Primary:</li> <li>P66 Safety Director: Nick Hutchins</li> </ul> </li> </ul>
GHD Site Supervisor: <b>Christine Mathews</b> Work: Cell:	505-884-0672 505-269-0088	
GHD RSHM: <b>Matt Downing</b> Work: Cell:	720-974-0949 720-445-2055	
/ain P66 RM Contact/Program Manager: Becky Hesslen		
Work:	918-977-4511	

P66 RM Field Manager Work: Cell:		
P66 RM Safety Director: <b>Jen Wiliams</b> Work: Cell	918-977-4511 918-914-3846	
P66 Site Contact: Royce Conger Work: Cell:	505-877-0900 505-400-2849	
Person to verify hospital route Christine Mathews	Signature	

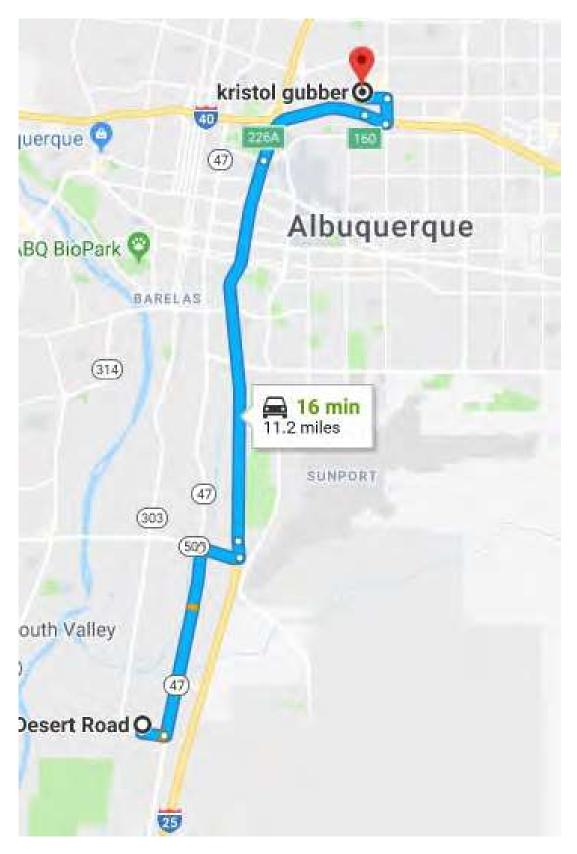
# **Hospital Map**



	min (7.9 miles) 🛛 🕄 👼						
Fast	astest route, the usual traffic						
20.00	6 Desert Rd guergue: NM 87105						
t	Head east on Desert Rd						
	0.3 ml						
٦	Turn left onto Broadway Blvd SE/Desert Rd O Continue to follow Broadway Blvd SE						
	2.5 ml						
r*	Turn right onto Rio Bravo Blvd SE						
	0.6 mi						
*	Use the left 2 lanes to turn left onto the Interstate 25 N ramp						
	in 2 m						
*	Merge onto I-25 N						
	39 mi						
r	Take exit 224B toward Dr. Martin Luthur King Jr Ave						
	0.1 ml						
r	Turn right onto Tijeras Ave NE						
	367 ft						
۴	Turn right at the 1st cross street onto Mulberry St NE						
	0.1 mil						
4	Turn left at the 2nd cross street onto Central Ave SE/Rte 66						
	Destination will be on the right						
	335 ft						

Albuquerque, NM 87106

# **Clinic Map**



# 16 min (11.2 miles)



via I-25 N Fastest route, the usual traffic

# 6356 Desert Rd

Albuquerque, NM 87105

Get on I-25 N in Albuquerque from Broadway Blvd SE

7 min (3.5 mi)

Continue on I-25 N to Carlisle Blvd NE. Take exit 160 from I-40 E

7 min (6.9 mi)

Continue on Carlisle Blvd NE. Drive to Menaul Blvd NE

3 min (0.7 mi) -

# kristol gubber

3101 Menaul Blvd NE, Albuquerque, NM 87107

# **Table of Contents**

1.	Intro	Introduction 1				
	1.1	Purpose1				
	1.2	Stop Work Authority1				
	1.3	Personnel Requirements				
	1.4	Short Service Employees2				
	1.5	Project Management and Safety Responsibilities 3				
	1.6	Site HASP Amendments6				
	1.7	Training Requirements6				
	1.8	Site-Specific Training				
	1.9	Safety Meeting/Safety and Health Plan Review7				
2.	Site	Operations	8			
	2.1	Site History/Background				
	2.2	Scope of Work				
3.	Haza	ard Evaluation	11			
	3.1	Chemical Hazards				
	3.2	Chemical Hazard Controls				
	3.3	Skin Contact and Absorption Contaminants12				
	3.4	Hazard Communication				
	3.5	Flammable and Combustible Liquids12				
	3.6	Physical Hazards				
	3.7	Heavy Equipment and Drilling Safety13				
	3.8	Noise				
	3.9	Utility Clearances				
	3.10	Vehicle Traffic and Control				
	3.11	Manual Material Handling and Storage18				
	3.12	Hoisting and Rigging				
	3.13	Cranes and Hoists				
	3.14	Manual Lifting				
	3.15	Hand and Power Tools21				
	3.16	Electrical Hazards				
	3.17	Control of Hazardous Energy (LOCK/TAG/TRY)				
	3.18	Excavations				
	3.19	UST/AST Removals				
	3.20	Confined Space Entry				
	3.21	Compressed Gas Cylinders				
	3.22	Fall Hazards				

	3.23	Portable Ladders	
	3.24	Slip/Trip/Hit/Fall	
	3.25	Heat Stress	
	3.26	Sun Exposure	
	3.27	Cold Stress	
	3.28	Hot Work Hazards	
	3.29	Working Over or Near Water	
	3.30	Special Work Conditions/Situations	
	3.31	Aggressive or Menacing Behavior	
	3.32	Social Protection	
	3.33	Use of Battery Operated Mobile Devices	
	3.34	Biological Hazards	
	3.35	Vegetation Overgrowth	
	3.36	Poisonous Plants	
	3.37	Insects	
	3.38	Poisonous Spiders	
	3.39	Threatening Dogs	
	3.40	Rodents	
	3.41	Snakes	
	3.42	Scorpions	
	3.43	Bloodborne Pathogens	
4.	Perso	onal Protective Equipment (PPE)	41
	4.1	General	
	4.2	Types of Personal Protective Equipment (PPE)	
	4.3	Types of Protective Material	
	4.4	Gloves	
	4.5	Respiratory Protection	
	4.6	Respirator Cleaning	
	4.7	Levels of Protection	
	4.8	Reassessment of Protection Levels	
5.	Air M	onitoring Program	44
	5.1	Exposure Monitoring	
	5.2	Photoionization Detectors	
	5.3	Multi-Gas Meter (LEL/O <sub>2</sub> /H2S/CO Meters)	
	5.4	Colorimetric Detector Tubes	
	5.5	Monitoring Frequency	
	5.6	Safety and Health Action Levels	
6.	Site C	Control	46

6.1	Communication			
6.2	Buddy System		47	
	6.2.1	Responsibilities	47	
6.3	3 Site Security		48	
6.4	Decontamination			
	6.4.1	Personnel and Equipment Decontamination Procedures	48	
Eme	rgency Pro	cedures		49
7.1	On-Site E	Emergencies	49	
7.2	Incident,	Injury, and Illness Reporting and Investigation	50	
7.3	Written R	Reporting Requirements	50	
7.4	Emergen	cy Equipment/First Aid	51	
7.5	Emergen	cy Procedures for Contaminated Personnel	51	
7.6	Site Evac	cuation	52	
7.7	Spill and	Release Contingencies	52	
Envir	Environmental Control Program			
8.1	Weather	Monitoring	52	
8.2	Tornado	Safety Policy and Procedures	52	
8.3	Rain and	Snow	53	
8.4	Tempera	ture	53	
8.5	Wind		53	
8.6	Lightning	and Thunder	54	
8.7	Outdoor I	Precautions during Severe Weather	54	
8.8	Indoor Pr	recautions during Severe Weather	55	
Medi	Medical Surveillance			55
9.1	Additiona	al Medical Surveillance	55	
9.2	Substanc	e Abuse Management	56	
Reco	ordkeeping			56
	<ul> <li>6.2</li> <li>6.3</li> <li>6.4</li> <li>Emet</li> <li>7.1</li> <li>7.2</li> <li>7.3</li> <li>7.4</li> <li>7.5</li> <li>7.6</li> <li>7.7</li> <li>Envir</li> <li>8.1</li> <li>8.2</li> <li>8.3</li> <li>8.4</li> <li>8.5</li> <li>8.6</li> <li>8.7</li> <li>8.8</li> <li>Medi</li> <li>9.1</li> <li>9.2</li> </ul>	<ul> <li>6.2 Buddy Sy 6.2.1</li> <li>6.3 Site Sectors</li> <li>6.4 Decontant 6.4.1</li> <li>Emergency Proposition</li> <li>7.1 On-Site B</li> <li>7.2 Incident,</li> <li>7.3 Written F</li> <li>7.4 Emergent</li> <li>7.5 Emergent</li> <li>7.6 Site Evant</li> <li>7.7 Spill and</li> <li>Environmental C</li> <li>8.1 Weather</li> <li>8.2 Tornado</li> <li>8.3 Rain and</li> <li>8.4 Temperat</li> <li>8.5 Wind</li> <li>8.6 Lightning</li> <li>8.7 Outdoor</li> <li>8.8 Indoor Proposition</li> <li>Medical Surveil</li> <li>9.1 Additional</li> </ul>	6.2       Buddy System	6.2       Buddy System

# **Table Index**

Table 1	Properties of Potential Site Contaminants
Table 2	Site Air Monitoring Program Action Levels

# **Appendices**

Appendix A	Forms
Appendix B	Job Hazard Analysis Forms
Appendix C	Safety Data Sheets
Appendix D	Travel Plan
Appendix E	Stakeholder Engagement
Appendix F	P66 Contractor Safety Requirements (Safety Handbook)
Appendix G	Working Alone Safety Requirements and Documentation
Appendix H	LOTO Hazardous Energy
Appendix I	Hot work
Appendix J	Workplace Electrical Safety Program

# **Figures**

Figure 4 Benzene and EDC Concentration Map (Showing Location of EDC and AVGAS/Benzene Plumes)

# HEALTH AND SAFETY PLAN Signature Page

Site Name:	Phillips 66 Albuquerque Produ	icts Terminal	
Location Address:	6356 Desert Road, Albuquerque, NM 87105		
Reference No.:	075015	GHD Office:	Albuquerque
Anticipated Start Da	ite: 7/29/2015	Anticipated F	Project Duration: 1 Year
Prepared By (Signat	ture):	Date:	11/30/2017 - Update
Project Manager (Si	gnature): Austria Duby	Date:	11/30/2017 - Update
Reviewed By (Signa	Iture:) matt Drining	-> Date:	11/29/17 Update

GHD QSF-013 Rev. 0 - 07/01/2015

# 1. Introduction

#### 1.1 Purpose

The purpose of this site-specific Health & Safety Plan (HASP) is to provide specific guidelines and establish procedures for the protection of personnel performing the activities described in Section 2 Site Operations in accordance with GHD and Phillips 66 Company Remediation Management (RM) guidelines. The information in this HASP has been developed in accordance with applicable standards and is, to the extent possible, based on information available to date. The HASP is also a living document, in that it must continually evolve as site conditions and knowledge of the site work activities develop.

A vital element of GHD's Health, Safety and Environment (HSE) Programs and Procedures is the implementation of a site-specific HASP for field activities. The HASP, as applicable to this project, includes the following measures:

- Communicate the contents of this HASP to site personnel.
- Eliminate unsafe conditions. Efforts must be initiated to identify conditions that can contribute to an incident and to remove exposure to these conditions.
- Utilize the STAR (Stop, Think, Act, and Review) process before beginning any activity/task/job, after an incident, and/or during any unusual circumstances. Stop the activities to think about the task, analyze the task hazards and determine methods to reduce risk, and review the results with affected personnel.
- Revise or develop Job Hazard Analysis (JHA) forms for activities. Supervisors and affected personnel are responsible for JHA development. A blank JHA form has been included in Appendix B of this HASP.
- Complete behavior-based Safety (BBS) observations via the use of the Safe Task Evaluation Process (STEP).
- Reduce unsafe acts. Personnel shall make a conscious effort to work safely. A high degree of safety awareness must be maintained so that safety factors become an integral part of the task. Supervisory personnel shall ensure that personnel committing unsafe acts are held accountable via counseling, mentoring, and, if necessary, implement disciplinary action as defined by the People Team.
- Inspect frequently. Regular documented safety inspections of the work site, materials, and equipment by qualified persons ensure early detection of unsafe conditions. Safety and health deficiencies shall be corrected as soon as possible or project activities shall be suspended. Documentation of inspections and corrective actions should be kept with the project files.

# **1.2 Stop Work Authority**

All GHD employees are empowered and expected to stop the work of co-workers, subcontractors, client employees, or other contractors if any person's safety or the environment are at risk. No repercussions will result from this action. Reporting of unsafe acts/conditions and/or the use of Stop Work Authority (SWA) shall be documented using the Unsafe Acts/Unsafe Conditions/SWA form located in Appendix A.

The discovery of any condition that would suggest the existence of a situation more hazardous than anticipated shall result in the removal of site personnel from that area and re-evaluation of the hazard and the levels of protection.

### **1.3 Personnel Requirements**

All personnel conducting activities on site must conduct their activities in compliance with all applicable Safety and Health legislation throughout North America to include, but not limited to, the Occupational Safety and Health Administration (OSHA) 29 CFR 1910, 29 CFR 1926, Phillips 66 Company RM Contractor Safety Requirements, Phillips 66 Company RM HSE Procedures, and GHD's policies and procedures. **Project personnel must also be familiar with the procedures and requirements of this HASP**. In the event of conflicting safety procedures/requirements, personnel must implement those safety practices affording the highest level of safety and protection.

All GHD and subcontractor personnel conducting activities on site must be certified in 29 CFR 1910.120 40-hour HAZOWPER training and current within 365 days of the 8-hour HAZWOPER refreshers.

All GHD and subcontractor personnel driving on site must be certified in defensive driving within the past 3 years.

All GHD personnel conducting activities on site must be in good standing with the GHD Substance Abuse Policy. Subcontractors must be in good standing with their companies Substance Abuse Policy that meets P66's Substance Abuse Policy.

All GHD personnel conducting activities on site must be currently cleared with the GHD Medical Surveillance program.

# **1.4 Short Service Employees**

The Short Service Employee (SSE) Program is intended to ensure new employees are identified, appropriately supervised, trained, and managed in order to prevent incidents such as personal injury, injury to others, environmental damage, or property damage.

GHD Supervisors complete a New Employee Training Requirement (QSF-020) review with all new employees. The QSF-020 defines the safety compliance and safety system requirements, in addition to the field methods and quality system training.

As part of review of training requirements, a supervisor will determine a new employee SSE status. A SSE must have the following training and documentation completed prior to field work:

- GHD New Employee HSE Orientation training (online)
- GHD Hazard Communication (HAZCOM) training/WHMIS (Canada) training (online)
- Remember Charlie video is viewed
- Compliance training defined on the QSF-020 as it applies to field work to be conducted
- Client-specific and site-specific training

Having completed the above requirements, SSEs will be provided a fluorescent orange hardhat or other obvious indicator of SSE status. For non-hard hat sites, the employee will be provided with

fluorescent hats and/or reflective safety vests, clearly marked with the letters SSE. The fluorescent orange hard hat, hats, or reflective safety vests will serve as visual identification to all personnel that the employee is participating in the SSE Program.

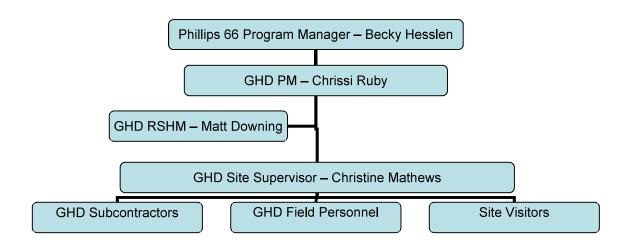
A SSE requires an on-site Mentor for all fieldwork. An on-site Mentor must have experience in the work they are mentoring and they are responsible for the close monitoring of the SSE.

Project team SSE make-up requirements are:

- A one-person project team cannot be a SSE
- A two to four-person project team can have only one SSE
- A five-person (or more) project team cannot have more than 20 percent SSEs without a written variance from a GHD Corporate HSE Manager (CHSEM)

After 6 months in the SSE Program, the employee will meet with their supervisor and a CHSEM or their designee. A review of the Field Training Log and tasks the SSE has completed during the period will be discussed. General observations and notes will be reviewed to ensure understanding of GHD's safety system and that no serious incidents have occurred. If all requirements have been met, the employee will have completed the SSE program and will change to the standard GHD hard hat and safety vests. If there are concerns regarding the employee's SSE performance, the SSE status can be extended.

### **1.5 Project Management and Safety Responsibilities**



#### Project Manager – GHD – Chrissi Ruby

The GHD Project Manager shall be responsible for the overall implementation of the HASP, and for ensuring that all HSE responsibilities are carried out in conjunction with this project. This shall include, but is not limited to, review and approval of the HASP, ensuring that the Safe Task Evaluation Process (STEP) forms are completed properly, qualifying and directing subcontractors relative to HSE performance, coordinating all HSE submittals, and consultation with the SS regarding appropriate changes to the HASP. The PM will also ensure that the appropriate resources are provided to support the project with respect to all operations.

#### Site Supervisor – GHD – Christine Mathews

The Site Supervisor (SS) is the person who, under the supervision of the project manager, shall be responsible for the communication of site requirements to site project personnel and subcontractors, and is responsible for carrying out the safety and health responsibilities by ensuring:

- 1. Conduct a daily Tailgate Safety meeting that communicates the site-specific hazards for the operations that day and what proactive measure will minimize the hazards. Each meeting must be documented on the Tailgate Safety Meeting Form to include all topics covered and the signatures of those in attendance.
- 2. All necessary cleanup and maintenance of safety equipment is conducted by project personnel.
- 3. Emergency phone numbers and services, including hospital and clinic locations, are verified.
- 4. Site personnel are implementing the STAR process before initiating activities.
- 5. JHA forms are developed and revised accordingly.
- 6. Forms attached to the HASP are completed, filed, and submitted correctly, including daily tailgate meetings and completion of daily inspection checklists.

Other duties include overall implementation of the HASP and ensuring that all safety and health responsibilities are carried out in conjunction with the project. This shall include, but is not limited to, review and approval of the HASP, communication of site requirements to subcontractor personnel, and consultation with the client/site representative regarding appropriate changes to the HASP.

The SS is also responsible for enforcing safe work practices for project employees. The SS watches for ill effects on any crew member, especially those symptoms caused by cold/heat stress or chemical exposure. The SS oversees the safety of visitors who enter the site. The SS maintains communication with the client/site representative(s).

Other specific duties of the SS include:

- Ordering the immediate shutdown and/or stop work of site activities in the case of a medical emergency, unsafe condition, or unsafe practice
- Providing the safety equipment, personal protective equipment (PPE), and other items necessary for employees
- Enforcing the use of required safety equipment, PPE, and other items necessary for employee or community safety

- Conducting job site inspections as a part of quality assurance for HSE
- Reporting HSE concerns to site and/or project management as necessary

#### Regional Safety & Health Manager - GHD – Matt Downing

The Regional Safety & Health Manager (RSHM) is a full-time GHD employee who is trained as an HSE professional, and serves in a consulting role to the PM and SS regarding potential HSE issues.

#### Employee Safety Responsibility

GHD employees are responsible for their own safety as well as the safety of those around them. GHD employees shall use any equipment provided in a safe and responsible manner, as directed by their supervisor.

Employees are directed to take the following actions when appropriate:

- Suspend any operations that may cause an imminent health hazard to employees, subcontractors, or others.
- Utilize the STAR process before initiating work.
- Assist in the development and revision of JHA forms that are appropriate to their current scope of work.
- Prepare, submit, and review behavior-based safety observations using the STEP form. The STEP form is to be used in conjunction with the appropriate JHA to identify positive aspects of task performance as well as to identify any deficiencies associated with the observed task.
- Inspect tools and other equipment before each use and as manufacturer and/or OSHA dictates.
- Correct job site hazards when possible without endangering life or health.
- Report HSE concerns to the SS, PM, and/or RSHM.

**Subcontractors.** GHD subcontractors are responsible for the implementation of their own HASP and agree to comply with its contents. In the event of conflicting safety procedures or requirements, personnel must implement those safety practices that afford the highest level of safety and protection. In addition, non-compliance with safety and health policies and procedures may subject the subcontractor to disciplinary action up to and including termination of their contract with GHD. Subcontractors will be required to attend an initial site orientation and subsequent safety meetings.

**Equipment Operators.** All equipment operators are responsible for the safe operation of heavy equipment. Operators are responsible for inspecting their equipment on a daily basis to ensure safe performance. Brakes, hydraulic lines, backup alarms, and fire extinguishers must be inspected routinely throughout the project. Equipment will be taken out of service if an unsafe condition occurs. Documentation of daily inspections is required.

**Authorized Visitors.** Authorized visitors, as approved by Chrissi Ruby or the Site Supervisor, shall be provided with all known information with respect to the site operations and hazards as applicable to the purpose of their visit.

### **1.6 Site HASP Amendments**

Any change to the scope of work must be evaluated for its impact on the overall health and safety of the project and associated personnel. A minor change is one that adjusts already documented hazards within the HASP and does not expose site personnel to chemicals above exposure limits, such as the introduction of a new JHA, Journey Management Plan, or PPE that does not involve a change in respiratory protection. Minor amendments must be documented on the Site Health and Safety Plan Amendment Form located in Appendix A, in addition to notifications to key personnel.

Significant changes to the scope of work require a rewrite and review/approval of the updated HASP.

### **1.7 Training Requirements**

All personnel conducting work at this site shall have completed the appropriate safety and health training as applicable to their job tasks/duties. The required training is referenced throughout the HASP and identified on each JHA form.

### **1.8 Site-Specific Training**

An initial site-specific training session or briefing shall be conducted by the PM or SS prior to commencement of work activities. During this initial training session, employees shall be instructed on the following topics:

- Personnel responsibilities
- Content and implementation of the HASP
- 5 key safety principals of RM:
  - 1. Report to work physically rested and mentally alert
  - 2. Observe and coach your co-workers to ensure that they work safely
  - 3. Do not improvise or take short cuts follow procedures
  - 4. There is zero tolerance for willful unsafe actions
  - 5. Stop all unsafe work
- P66 RM Safety Commitment Cards
  - Must be prepared and signed prior to starting work
  - Must be implemented with all site workers and carried with the person at all times
- P66 RM Basic Safety Orientation Video
  - All direct site workers are required to view this video within the previous 12 months
  - Document with specific Training Log in Appendix A
  - Maintain copy in HASP for Subcontractors
  - Send copy to GHD Training Records will be added to your QFL-10
- RM P66 Contractor Safety Requirements including Appendix F (e.g., Hole Clearing, Safety Knives Safe Driving Drilling Safety Minimum Requirements [Hand and as Job Hazard Analysis needed])

- Site hazards and controls
- Site-specific hazardous procedures (e.g., drilling, excavations, etc.)
- Training requirements
- PPE and hand protection requirements
- Emergency information, including local emergency response team phone numbers, route to nearest hospital, incident reporting procedures, and emergency response procedures
- Instruction in the completion of required inspections and forms
- Location of safety equipment, such as portable eyewash, first aid kit, fire extinguishers, etc.
- Stakeholder Engagement
  - Includes viewing the Stakeholder Engagement Training Video and signing the acknowledgement form in Appendix A
  - Review of the Stakeholder Engagement Guidance Document included in Appendix E
  - Review of the Stakeholder Engagement Wallet Card included in Appendix E

The various components of the project HASP will be presented, followed by an opportunity to ask questions to ensure that each attendee understands the HASP. Personnel successfully completing the training session shall sign the HASP Training Acknowledgement Form, the Phillips 66 Company RM Safety Commitment Cards, the Phillips 66 Company RM Basic Safety Orientation Video Review Form, and the Phillips 66 Company RM Stakeholder Acknowledgement Video Form, which are presented in Appendix A.

In addition to the initial site briefing conducted at the commencement of the project, supplemental brief safety meetings shall be conducted by the SS to discuss potential HSE hazards associated with upcoming tasks and necessary precautions to be taken.

#### **1.9** Safety Meeting/Safety and Health Plan Review

"Tailgate" safety meetings will take place each day prior to beginning the day's work. All site personnel will attend these safety meetings conducted by the SS. The safety meetings will cover specific HSE issues, including the appropriate JHAs, the **SPECIFIC PERSONAL PROTECTIVE EQUIPMENT FOR THE TASKS**, site activities, changes in site conditions, procedures if engaged with a stakeholder, and a review of topics covered in the site-specific pre-entry briefing. The safety meetings will be documented each day with written sign-in sheets containing a list of topics discussed. To assist with the compliance of documentation of the Tailgate safety meetings, there are two formats available. For meetings attended by more than four people, please use the Tailgate Safety Meeting Form - Large Group daily format, which requires one page for each Tailgate Safety Meeting Form - Small Group multiple-day format, which provides room to document three Tailgate safety meetings on one page. The two Tailgate Safety Meeting Forms (Large Group and Small Group) are located in Appendix A.

# 2. Site Operations

### 2.1 Site History/Background

The Site is an active petroleum product terminal operated by Phillips 66, which includes aboveground storage tanks, truck loading facility, and associated aboveground and underground piping. The Site is situated in the southwest quadrant of Albuquerque, New Mexico, approximately one and a half miles east of the Rio Grande.

An Administrative Compliance Order (CO) was issued by the New Mexico Environment Department (NMED) Groundwater Quality Bureau on April 16, 2004 (GWQB 2004-03). As a result of the CO, Phillips 66 installed three monitoring wells at the Site for the purpose of above ground storage tank leak detection. Monitoring wells MW-7, MW-8, and MW-9 were installed by Tetra Tech, Inc. (Tetra Tech) during March 2007. These monitoring wells, in addition to MW-4 and MW-5, were sampled in accordance with the CO on an annual basis until December 2009.

Two petroleum hydrocarbon releases were discovered at the Site in December 2009 in the Tank 102 and Tank 105 containment areas. It was estimated that approximately 138 barrels (bbls) of aviation gasoline (AVGAS) and water were released inside the berm of Tank 102 from a cracked coupling on a pipe located on the southwest side of Tank 102 on December 17, 2009. The second release was discovered by terminal operators on December 28, 2009. It was estimated that approximately 1,499 bbls of AVGAS and water were released from the Tank 102 circulation line inside the berm surrounding Tank 105 when the line ruptured at a weld seam. Approximately 674 bbls of the released product and water were recovered using vacuum trucks the same day the release was discovered. Phillips 66 submitted a Corrective Action Plan (CAP) to the New Mexico Environment Department (NMED) on March 26, 2010 following initial release investigation efforts.

Soil vapor extraction (SVE) wells were installed at the Site along with monitoring well MW-10 and air sparge well AI-01 during April 2010. Quarterly sampling of monitoring wells MW-4 and MW-9 was initiated immediately following discovery of the Tank 102 releases. MW-10 was incorporated into the quarterly monitoring schedule after its installation.

Concurrent with the Tank 102 release investigation, delineation, and remediation system installation, a subsurface investigation of the loading rack area took place after vapor points in this area contained elevated detections of a tracer gas used in conjunction with a Tracer Tight<sup>®</sup> test. A direct-push, truck-mounted drill rig was used to delineate the area immediately surrounding the loading rack during November 2010. Subsequently, monitoring well MW-11 was installed down-gradient of the loading rack. MW-11 was added to the quarterly monitoring schedule immediately following installation.

A pilot test was conducted on the SVE system at the Site during January 2011. Once all emission permits were properly in place and received from the City of Albuquerque Environmental Health Department, Air Quality Division (AEHD), official start-up of the SVE system occurred in June 2011.

On June 15, 2011, site consulting responsibilities were transferred from Tetra Tech to GHD (formerly Conestoga-Rovers & Associates, Inc. (CRA)) of Albuquerque, NM. GHD continued quarterly groundwater sampling of the Site and SVE system operations and maintenance.

Light non-aqueous phase liquid (LNAPL) was discovered in monitoring well MW-10 on September 22, 2011. In response to the LNAPL discovery, GHD placed a passive skimmer in MW-10 to collect LNAPL. The skimmer was checked, emptied, and reinstalled an average of three times per week from September 22nd through November 1st, 2011, and weekly thereafter until March 2012.

To further address LNAPL in MW-10, GHD installed monitoring wells MW-12, MW-13, and MW-14 as potential LNAPL recovery and intermediate down-gradient wells during November and December 2011. These wells were incorporated into the quarterly monitoring schedule immediately following installation.

In March of 2012, an effort to over-drill monitoring well MW-10 for the purpose of increasing the well diameter to optimize future LNAPL recovery efforts resulted in an abandonment of that well due to a broken string of augers that could not be recovered.

In June of 2012, an effort to further develop monitoring wells MW-12 and MW-13 took place in preparation for a dual phase extraction event. On June 18, 2012, both wells were surged repeatedly following the addition of Aquaclear® PFD. Both wells were bailed dry on the following day. On June 25, the wells were again surged following the addition of Aquaclear® AE. Both wells were then bailed dry repeatedly during the next four days. On June 27, 2012, 0.13 feet of product was discovered in MW-12. GHD installed a passive skimmer device in MW-12 immediately following discovery of LNAPL which was emptied weekly. On July 13, LNAPL thickness in MW-12 had increased to 1.54 feet.

On September 12, 2012, LNAPL was detected in MW-13 at a thickness of 0.49 feet. The presence of LNAPL was addressed by the performance of two dual phase extraction events that occurred on September 12, 13, and 14, 2012 and October 24, 25, and 26, 2012. LNAPL thickness in MW-12 and MW-13 had been reduced to 0.11 feet and 0.33 feet, respectively, at the time of the December 2012 quarterly sampling event. Approximately 225 and 83 gallons of hydrocarbons were extracted during the September and October dual phase extraction events, respectively.

A solar-powered pump system manufactured by Xitech, Incorporated, was installed during May 2013 in well SVE-1D for the purpose of LNAPL extraction. During July of 2013, monitoring well MW-12 was also fitted with a Xitech skimmer pump and plumbed to be incorporated into the SVE well network.

A request was made of the AEHD on June 7, 2013 to cease operation of the thermal oxidizer feature of the SVE system based on declining influent hydrocarbon concentrations and supporting air modeling data. The SVE system was shut down on August 9, 2013 because the low influent hydrocarbon concentrations had become insufficient to maintain an adequate operating temperature for the system's thermal oxidizer. The SVE system was restarted on September 4, 2013 after a modified SVE air quality permit was issued by AEHD allowing venting directly to air without the emission controlling thermal oxidizer. The Xitech LNAPL recovery system was also restarted at that time. By September 2013, the Xitech system was only recovering LNAPL from well SVE-1D, the only SVE or groundwater monitoring well with LNAPL present. The cascading effect of water in SVE wells in which Xitech pumps were installed proved to make skimmer pump placement at the LNAPL/groundwater interface too difficult and an excess of groundwater to equilibrate so skimmers could be set in wells containing LNAPL and not under vacuum, which would optimize recovery. The Xitech system recovered approximately 50 gallons of LNAPL before being shut off in January 2014.

Sub-freezing temperatures during winter months of 2013 began to cause the accumulation of excessive quantities of condensate in knock out (KO) tanks connected to the SVE system. This condensate water was being emptied daily from the KO tanks by terminal staff and stored in two 500 gallon galvanized steel evaporation tanks next to the system. Production of condensate began to exceed evaporation rates and eight 55-gallon drums were used for additional storage of KO tank water. A Notice of Intent to Discharge was filed with the NMED and permission was granted to discharge approximately 1,100 gallons of collected condensate water from the evaporation tanks and 55-gallon drums into the Tank 105 bermed area.

The SVE system was operated intermittently during 2014. A declining mass removal rate, averaging 1.03 gallons per day during 201 days of operation in 2014, was the primary reason the SVE system was shut down after collection of the last air quality sample in September 2014. A 1.0 gallon per day mass removal rate had been established as a metric for consideration to cease operation of the SVE unit.

Hydrocarbons removed by the SVE system had fallen below 100 ppm and in September 2014 and the system was consequently shut off after operating for three years and removing an estimated 8,735 gallons of hydrocarbons. On September 30th, 2015 GHD was onsite with the AEHD for a final inspection of the system to ensure all electrical components associated with the SVE unit have been disconnected. The AEHD issued a permit closure letter dated December 3, 2015. The SVE unit was dismantled and removed from the Site in May 2016.

Power supply issues and short life span of the delicate carbon vanes in the air compressor have resulted in only intermittent operation of the air sparging unit at the Site.

GHD installed two injection wells (IW-1 and IW-2) at the Site and one off-site monitoring well (MW-15) during the week of August 3, 2015.

An in-situ chemical oxidation (ISCO) pilot study occurred during November 2015 to address primarily 1,2-Dichloroethane (EDC) impacts in the southern plume area of monitoring wells MW-9 and MW-11. Approximately 1600 gallons of a sodium hydroxide catalyzed sodium persulfate solution was pumped into each of the two injection wells installed at the loading rack.

There are currently ten monitoring wells and two injection wells at the Site. Groundwater monitoring wells are sampled semiannually in March and September.

#### 2.2 Scope of Work

The objectives of this project are to continue groundwater monitoring and remediation to work towards Site closure.

This HASP covers the specific site activities that will be conducted by GHD personnel and their subcontractors. These activities are as follows:

- Mobilization of personnel, materials, and equipment to and from the site
- Driving
- Site reconnaissance activities
- Fluid level monitoring

- Groundwater Sampling
- Free petroleum hydrocarbon gauging, recovery (by enhanced fluid recovery (EFR)) and disposal activities
- Remediation system operation and maintenance (O&M) activities
- Monitoring well installation
- Decontamination of sampling equipment
- In-situ chemical oxidation injections

If site operations are altered or if additional tasks are assigned, an addendum to this HASP shall be developed to address the specific hazards associated with these changes.

# **3. Hazard Evaluation**

This section identifies and evaluates the potential chemical, physical, and biological hazards that may be encountered during the completion of this project. These hazards and the anticipated initial exposure levels are based on client data, historical data, and consultant knowledge.

Specific activity JHA forms (located in Appendix B) have been developed to address the hazards associated with the site operations outlined in Section 2. New JHAs will be developed on an as-necessary basis if a JHA for that specific task is not available in the HASP. Additionally, current JHAs will be modified and customized in the field to ensure that the task-specific requirements are addressed each time the task is performed.

#### **3.1 Chemical Hazards**

The chemical hazards associated with conducting site operations include the potential exposure to on-site contaminants encountered during field activities such as drilling, soil sampling, groundwater sampling, and O&M, as well as products used in decontamination of equipment, and support products such as fuel. The potential routes of exposure from these products during normal use may occur through inhalation of vapors and dusts, or direct contact or absorption with the materials. The chemical hazards of concern that may be encountered during the tasks identified in the project's scope of work are located in two separate plumes. The contaminants of concern in in the north plume/AVGAS plume include benzene, toluene, ethylbenzene and xylenes (BTEX), and naphthalenes. The contaminant of concern in the southern plume is ethylene dichloride (EDC). A listing of the contaminants of concern is found in Table 1.0, which includes exposure limits, signs and symptoms of exposure, chemical properties, and physical characteristics.

#### **3.2 Chemical Hazard Controls**

Exposure to potential on-site contaminants/chemicals, such as those listed in Table 1.0 and Appendix C Safety Data Sheets (SDSs), shall be controlled by:

- Monitoring air concentrations with appropriate equipment in the breathing zone
- Revising JHAs to list chemical hazards and associated hazard controls on a task-specific basis
- Employing dust control measures such as wetting the immediate area

• Using PPE/respiratory protection, as appropriate, in areas known to have concentrations above the specified action level for each contaminant

### 3.3 Skin Contact and Absorption Contaminants

Skin contact with chemicals may be controlled by use of the proper PPE and good housekeeping procedures. The proper PPE (e.g., Tyvek®, gloves) as described in Section 4 shall be worn for all activities where contact with potentially harmful media or materials is anticipated. Utilize manufacturer data on permeation and degradation to minimize skin contact potential (see Section 4.2.1 for additional information).

### **3.4 Hazard Communication**

Personnel required to handle or use hazardous materials as part of their job duties will be trained and educated in accordance with the HAZCOM standard including the alignment with the Globally Harmonized System (GHS) of classifying and labeling chemicals. The training shall include instruction on the safe use and handling procedures of hazardous materials, how to read and access SDSs, and the proper labeling requirements.

The appropriate SDSs for the chemicals in use at the site will be maintained by and available for project personnel throughout the course of the project. A copy of all GHD SDSs is provided in Appendix C.

### 3.5 Flammable and Combustible Liquids

The storage, dispensing, and handling of flammable and combustible liquids must be in accordance with industry standards such as National Fire Protection Agency (NFPA) guidelines. The specific flammable or combustible liquids used at the site may include gasoline, diesel, kerosene, oils, and solvents.

Flammable and combustible liquids are classified according to flash point. This is the temperature at which the liquid gives off sufficient vapors to readily ignite. Flammable liquids have flash points below 100°F (37.8°C). Combustible liquids have flash points above 100°F (37.8°C) and below 200°F (93.3°C).

#### Storage

Many flammables can ignite at temperatures at or below room temperature. They are far more dangerous than combustibles when they are heated. As a result, these products must be handled very carefully. At normal temperatures, these liquids can release vapors that are explosive and hazardous to employee health. Exposure to heat can cause some of these liquids to break down into acids, corrosives, or toxic gases. For this reason, flammable and combustible liquids should be stored in cool, well ventilated areas away from any source of ignition. Always consult the SDS of the product for specific information.

Flammable and combustible liquids must be stored in designated areas. Such areas must be isolated from equipment and work activity that may produce flames, sparks, heat, or any form of ignition, including smoking. The most practical method is the use of one or more approved (commercially available) flammable/combustible liquid storage cabinets.

Cabinets must be labeled "Flammable – Keep Fire Away." Doors must be kept closed and labeled accordingly. Containers must be kept in the cabinet when not in use.

#### **General Requirements**

- Keep containers of flammable/combustible liquids closed when not in use.
- Keep flammable/combustible liquids in designated areas and approved cabinets.
- Do not allow use of unapproved containers for transfer or storage. Use only approved safety cans (5-gallon maximum) with a spring closing lid and spout cover, designated to safely relieve internal pressure when exposed to heat or fire.
- Use only approved self-closing spigots, faucets, and manual pumps when drawing flammable/combustible liquids from larger containers/barrels.
- Use only approved metal waste cans with lids for disposal of shop towels/oily rags.
- Designate "Smoking" and "No Smoking" areas.
- Designate fueling areas.
- Observe all signs indicating "No Smoking," "No Flames," and "No Ignition."

#### Transferring Flammable/Combustible Liquids

- This seemingly routine task can be hazardous if certain precautions are not followed. Grounding and bonding must be observed at all times to prevent the accumulation of static electricity when transferring containers/barrels one to another.
- Drums should be grounded to a grounding rod using a #4 copper conductor.
- Bonding is necessary between conductive containers (e.g., a barrel and a 5-gallon container).

#### **3.6 Physical Hazards**

Physical hazards that may be present during project work include: potential for close proximity to heavy equipment and drilling devices, noise, overhead or underground utilities, vehicle traffic, material handling, heavy lifting, electrical or stored energy, excavations, use of hand and power tools, use of utility task vehicles, slip/trip/hit/fall injuries, hot work (e.g., welding, cutting, and open flame), heat/cold stress, working on or near water, working at night or with illumination difficulties, biological hazards, other potential adverse weather conditions, working alone, and aggressive or menacing behavior. In addition, personnel must be aware that the protective equipment worn may limit dexterity and visibility and may increase the difficulty of performing some tasks.

#### 3.7 Heavy Equipment and Drilling Safety

#### Heavy Equipment

The following practices shall be adhered to by personnel operating heavy equipment (such as backhoes) and personnel working in the vicinity of heavy equipment:

• Heavy equipment is to be inspected when equipment is initially mobilized, delivered to a job site, or after it is repaired and returned to service, to ensure that it meets all manufacturer and OSHA specifications (e.g., fire extinguishers, backup alarms, etc.).

- Heavy equipment is to be inspected on a daily basis. Documentation of this daily pre-operational inspection is to be filed with the project files. Mobile equipment inspection forms are attached in Appendix A.
- Heavy equipment is only to be operated by authorized, competent operators.
- Seat belts are to be provided on heavy equipment that is not designed for stand-up operation.
- Equipment/vehicles whose payload is loaded by crane, excavator, loader, etc., will have a cab shield and/or canopy to protect the operator.
- Personnel will not be raised/lowered in buckets.
- Personnel will not ride on fender steps or any place outside the cab.
- Before leaving the equipment controls, ensure that the equipment is in its safe resting position.
   For a backhoe, apply the parking brake, put the front loader bucket down on the ground level, and ensure that the rear excavator bucket is locked in the travel position. Bulldozers and scraper blades, loader buckets, dump bodies, and similar equipment will be fully lowered or blocked when not in use.
- Before raising any booms, buckets, etc., check for overhead obstructions.
- Employees involved in the operation shall not wear any loose-fitting clothing, as it has the potential to be caught in moving machinery.
- Personnel shall wear high visibility safety vests, steel toed shoes, safety glasses, hearing protection, and hard hats during heavy equipment operations.
- When moving heavy equipment or when working within 10 feet of a stationary object or in tight quarters, a spotter will be used.

#### **Drilling Equipment**

All drilling activities will be completed in accordance with Environmental Remediation Drilling Safety Guideline. The specific P66 procedures that must be adhered to are the Procedure for Drilling and Borehole Clearing (Section 20.1 of P66 Contractor Safety Requirements), Drilling Safety Minimum Requirements (Section 20.4 of P66 Contractor Safety Requirements), and Hand Protection (Section 20.5 of P66 Contractor Safety Requirements), all of which are included in Appendix F.

#### General Safety and Emergency Response for Drilling Activities

- Before any work is begun, including rig set up, a tailgate safety meeting, review of the site specific health and safety plan, and job hazard review must be conducted at the site.
- JHAs must be specific to the rig to be utilized.
- The minimum drilling rig crew size is 2 people.
- A first-aid kit must be available in an easily accessible area away from the drilling operation. Its location must be reviewed during the tailgate safety meeting.
- At least one fire extinguisher, minimum 20#, rated for type A-B-C fires must be readily accessible and removed from mounting brackets at the site away from the drilling rig. Its location must be reviewed during the tailgate safety meeting.
- The crew must have access to a cell phones or 2-way radio for communication in case of emergency.

- Work cannot be performed if lightning strikes are observed in the area.
- The use of cell phones is strictly prohibited during drilling. Cell phones must never be used within the exclusion zone.

The following practices shall be adhered to by drilling personnel when using hollow-stem auger, flight auger, air rotary, caring hammer, mud rotary, sonic or direct-push drilling operations:

- 1. A drilling contractor will complete a checklist daily to ensure that equipment is in safe and operable condition. The checklist must be available on-site for review. A blank checklist is included in Appendix A.
- 2. There will be no oil, fuel, or hydraulic fluid leaks from equipment.
- 3. Deck engine gauges must be in working order.
- 4. Rig controls and levers, including emergency shut-off, must be legibly labeled. Wherever possible, Pinch points should be identified and labeled.
- 5. Adequate cribbing must be in place under the leveling jacks and outriggers to prevent tip-over or sinking into unstable soil.
- 6. Secure the rig when it is in position but not in use. Set brakes and/or locks, chock wheels or tracks as conditions require.
- 7. The exclusion zone(s) must be marked with a continuous barrier, minimum height of 28 inches, where the potential for site visitation by the public or other pedestrians exists.
- 8. The exclusion zone(s) should be large enough to safely accommodate all workers and drilling equipment.
- 9. Check for adequate overhead clearance before raising the mast. Work in proximity to overhead power lines must address risk of contact with lines.
- 10. Never travel with the mast of the drill rig in the raised or partially raised position.
- 11. The drilling rig must be equipped with an operable emergency shut-off or "kill" switch. All persons working within the exclusion zone(s) must know the location and operation of the emergency shut-off switch. The functionality of all emergency shut-off switches must be tested at the start of each work day.
- 12. Whip checks or anti-whip devices must be in place on all pressurized hose lines.
- 13. Augers, drill rods, or any down-hole equipment should be cleaned only when the drill rig is in neutral, the engine is idle, and the machinery has stopped rotating.
- 14. Repair to drill rigs must be done by a person trained and qualified to perform the repair.
- 15. Small equipment leaks that develop after the start of work must be evaluated. If the leak does not impair the performance of the equipment and the leak can be contained, work may continue.
- 16. Do not perform maintenance or refueling while the equipment is operating.
- 17. Use of catheads or open drum-powered winches is not allowed.
- 18. Work must cease if cables or cable clamps become damaged or frayed.
- 19. No body part is allowed within 12 inches of a turning auger.

- 20. Broken or substandard equipment must not be brought to the site. Equipment that becomes broken must be tagged as such and shall not be used for any purpose.
- 21. Equipment must not be used if guards are not in place.
- 22. Work areas must be kept in a clean and orderly condition. Tools and equipment must be stored properly when not in use.
- 23. A worker must not attempt to move a load unassisted if the weight and bulk exceeds the capability of the worker. Loads greater than 50 pounds should not be repeatedly moved by a single person.
- 24. Vertical storage of drill rods and augers is not allowed, unless the rig is specifically designed to accommodate this practice.
- 25. Drilling rods and augers shall not be removed in multiple sections. Drilling rods and augers must be broken down at each joint as they are removed from the hole.
- 26. Manual tools must not be used in combination with powered rotation.
- 27. Rig operators and helpers must be knowledgeable of any after-market modifications to drilling equipment and be trained in its use. Use, purpose and precautions associated with after-market modifications must be specified on the procedures, job hazard analysis, or other documentation maintained at the site.
- 28. If any down-hole equipment becomes stuck and normal rotation, pulling, or pushing is not possible, a written procedure for this task ("fishing") must be followed.

#### Personal Protective Equipment (PPE)

Minimum required PPE for drilling jobs includes hard hat, safety shoes with steel toes, safety glasses or goggles, gloves, and hearing protection. Additionally, fire resistant clothing must be worn by all personnel while onsite.

- Appropriate PPE must be worn to prevent irritation or contamination of the skin when handling potentially contaminated articles and spoils.
- Hand Protection MUST meet the P66 RM Contractor Safety Requirements Section 20.5 Hand Protection. Bare hands are NOT allowed in any work areas on a P66 site. LEATHER GLOVES DO NOT MEET THE P66 HAND PROTECTION STANDARD. All drilling and drilling related support work must meet the ANSI cut level 3 or 4.
- Hearing protection with a minimum Noise Reduction Rating (NRR) of 17 dB must be worn in the exclusion zone(s) or when working within 20 feet of the operating rig. Most foam insert plugs and muffs meet or exceed this requirement.
- Secure all loose clothing, hair wraps, strings on jackets and hoods, and shoelaces.
- Jewelry is not allowed to be worn.
- A face shield must be worn for splash protection during equipment decontamination and for other activities involving splash hazards.
- If work is performed at a height of greater than 4 feet above ground level, a job hazard analysis must be in place to address fall protection measures.

### 3.8 Noise

Project activities that include working in close proximity to heavy equipment and/or drilling operations, or using power tools that generate noise levels exceeding the decibel range of 85 dBA will require the use of hearing protection with a Noise Reduction Rating (NRR) of at least 20. Hearing protection (earplugs/muffs) will be available to personnel and visitors requiring entry into these areas.

When it is difficult to hear a coworker at normal conversation distance, the noise level is approaching or exceeding 85 dBA and hearing protection is necessary. All site personnel who may be exposed to high noise levels will participate in GHD's Hearing Conservation Program.

### **3.9 Utility Clearances**

Elevated superstructures (e.g., drill rigs, back hoes, scaffolding, ladders, cranes) shall remain a distance of 10 feet away from utility lines (<50 kV) and 20 feet away from power lines (>50 kV). Underground utilities, if present, shall be clearly marked and identified prior to commencement of work. Follow local/state/provincial regulations and client requirements with regards to utility locating requirements (e.g., One-Call).

Personnel involved in intrusive work shall:

- Review and complete utility clearance activities in accordance with the Phillips 66 Company Borehole Clearance Procedure for Drilling and Geoprobe Hole Clearing as contained in the P66 Contractor Safety Requirements included in Appendix F.
- Confirm proposed excavation(s) and heavy truck routes are not in the area of subsurface utilities. This meeting is to be documented.
- Review and adhere to GHD's Subsurface Utility Clearance Protocol. Use prudent digging techniques inside 18 inches outside of the outside edge of an underground facility. This distance will vary based on state law, facility/client requirements, etc.
- Utilize the Property Access/Utility Clearance Data Sheet (QSF-019). This is to be completed prior to initiating excavation activities.
- Be able to determine the minimum distance from marked utilities, identify the work that can be conducted with the assistance of the locator line service, coordinate document/drawing review, and inspect the site for manholes, catch basins, valve boxes, etc., that may indicate the direction/depth of underground installations. Marking indicates only the approximate location of buried lines. After obtaining the facility owner's permission, hand dig test holes (or use an equivalent means) in a careful and prudent manner to determine the precise location of underground facility lines. If the location of the lines is still undeterminable after hand digging/probing/soft digging, call the facility owner for additional direction and assistance prior to initiating intrusive operations.
- If you must expose a line, the state law requires GHD to protect and support the underground facility line while working at the site.

#### **Borehole Clearance**

Borehole clearance must be completed in accordance with the Procedure for Drilling and Geoprobe Hole Clearing as contained in the P66 Contractor Safety Requirements included in Appendix F.

- Ensure hole clearing is done safely without impacting underground, process piping, equipment, or other underground structures
- Review proposed drilling plan with RM Site Manager and applicable stakeholders
- Gather and review all available maps and as-built drawings, if available
- Contact public One-Call Locate Services
- If proposed borehole is <5 feet from located line or if One-Call was not adequate, consult RM Site Manager
- Private Line Locating Service will be required
- Locate boreholes >5 feet away and perpendicular to located line
- Look for visual evidence of hazards and lines consider all overhead utilities
- Clearance bore hole with air knife or hydro-vac 120 percent of drill diameter and 5 feet below ground surface
- Hand auger and probing not allowed without variance approval from RM Site Manager

### 3.10 Vehicle Traffic and Control

The following safety measures are to be taken by GHD personnel that have the potential to be exposed to vehicle traffic:

- A high visibility safety vest meeting ANSI Class II garment requirements will be worn at all times
- Employees will work using the "buddy system"
- Cones and other visible markers will be used to demarcate a safe work zone around the active work zone(s)
- Appropriate signage will be posted as necessary, to inform roadway/parking lot users of any additional control measures necessary to protect the public and GHD employees

#### 3.11 Manual Material Handling and Storage

Material handling and storage practices to be conducted at the project site include manual lifting of materials and possibly the use of hoisting and rigging equipment. As a rule, use mechanical means for lifting heavy loads whenever possible.

#### **General Storage Practices**

The basic safety requirement for storage areas is that the storage of materials and supplies shall not create a hazard. Additional general storage area practices include the following:

• Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked, and limited in height so that they are stable and secure against sliding or collapse.

- All stacked materials, cargo, etc., shall be examined for sharp edges, protrusions, signs of damage, or other factors likely to cause injury to persons handling these objects. Defects should be corrected as they are detected.
- Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage.
- Storage areas shall have provisions to minimize manual lifting and carrying. Aisles and passageways shall provide for the movement of mechanical lifting and conveyance devices.
- Stored materials shall not block or obstruct access to emergency exits, fire extinguishers, alarm boxes, first aid equipment, lights, electrical control panels, or other control boxes.
- "NO SMOKING" signs shall be conspicuously posted, as needed, in areas where combustible or flammable materials are stored and handled.
- Equipment, trash, and other miscellaneous materials stored in vehicles will be secured during transport. In addition, cargo nets will be utilized for any materials in the beds of pick-up trucks to prevent them from blowing out.

Cylindrical materials, such as pipes and poles, shall be stored in racks or stacked on the ground and blocked.

#### Special Precautions for Hazardous or Incompatible Materials Storage

Generally, materials are considered hazardous if they are ignitable, corrosive, reactive, or toxic. Manufacturers and suppliers of these materials must provide the recipient with SDSs, which describe their hazardous characteristics and give instructions for their safe handling and storage.

Many hazardous materials are incompatible, which means they form mixtures that may have hazardous characteristics not described on the individual SDSs. The following special precautions shall be followed regarding the storage of hazardous materials:

- Based on the information available on the SDSs, incompatible materials shall be kept in separate storage areas
- Warning signs shall be conspicuously posted, as needed, in areas where hazardous materials are stored

## **3.12 Hoisting and Rigging**

Wire ropes, chains, ropes, and other rigging equipment will be inspected prior to each use and as necessary during use to assure their safety. Defective rigging equipment will be immediately removed from service.

Rigging will not be used unless the weight of the load falls within the rigging's safe work operating range. This must be verified by the authorized rigger prior to any "pick" or lifting operation.

Only personnel trained in safe rigging procedures will be authorized to engage in rigging procedures. Additionally, the rigger must understand and use recognized crane signals.

Job or shop hooks and links and other makeshift fasteners **shall not** be used. When U-bolts are used for eye splices, the U-bolt will be applied so the "U" section is in contact with the dead end of the rope.

Wire ropes, chains, ropes, and other rigging equipment shall be stored where they will remain clean, dry, and protected from the weather and corrosive fumes.

The proper length of rope or chain slings will be used to avoid wide-angle lifts and dangerous slack. Knotted ropes or lengths of ropes reduced by bolts, knots, or other keepers will not be used.

# **3.13 Cranes and Hoists**

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

## 3.14 Manual Lifting

Proper lifting takes the hazard out of moving heavy objects. Below are some items that should be considered prior to a lift.

- Establish that you can lift the load safely; if the load is in excess of 50 pounds, you are required to ask for assistance
- Use a mechanical lifting device if available
- Inspect route to be traveled, confirming sufficient clearance
- Look for any obstructions or spills
- Inspect the object to determine how it should be grasped
- Look for any sharp edges, slivers, or other things that may cause personal injury
- Do not move any object that will obstruct your field of vision when transporting the load

When lifting objects, use the following proper lifting techniques:

- Feet must be parted, with one foot alongside the object being lifted and one foot behind. When the feet are comfortably spread, a more stable lift can occur and the rear foot is in a better position for the upward thrust of the lift.
- Use the squat position and keep the back straight but remember that straight does not mean vertical. A straight back keeps the spine, back muscles, and organs of the body in correct alignment, and minimizes the compression of the abdomen that can cause a hernia.
- Grip is one of the most important elements of correct lifting. The fingers and the hand are extended around the object, using the full palm. Fingers have very little power, so use the strength of your entire hand.
- The load must be drawn close, and the arms and elbows must be tucked into the side of the body. Holding the arms away from the body increases the strain on the arms and elbows. Keeping the arms tucked in helps keep the body weight centered.

The body must be positioned so that the weight of the body is centered over the feet. This provides a more powerful line of thrust and also ensures better balance. Start the lift with a thrust of the rear foot. Do not twist.

# **3.15 Hand and Power Tools**

#### Hand Tools

- Hand tools must meet the manufacturer's safety standards
- Hand tools must not be altered in any way
- At a minimum, eye protection must be used when working with hand tools
- Wrenches (including adjustable, pipe, end, and socket wrenches) must not be used when jaws are sprung to the point that slippage occurs
- Impact tools (such as drift pins, wedges, and chisels) must be kept free of mushroom heads
- Wooden handles must be free of splinters or cracks and secured tightly to the tool
- Any damaged or defective tools must be immediately removed from service and tagged for destruction

#### **Power Tools**

- All power tools must be inspected regularly and used in accordance with the manufacturer's instructions and the tool's capabilities
- Electric tools must not be used in areas subject to fire or explosion hazards, unless they are approved for that purpose
- Portable electric tools must be connected to a Ground Fault Circuit Interrupter (GFCI) when working in wet areas
- Proper eye protection must be used when working with power tools.
- Personnel must be trained in the proper use of each specific tool
- Any damaged or defective power tools must be immediately tagged and removed from service.

#### No Open Blade Policy

Fixed open-bladed knives (FOBK) are tools that have an exposed, prominent, sharp-edged blade that is fixed or can be locked into a fixed position. Examples of FOBKs include pocket knives, multi-tools (like Leather-man belt tool), hunting knives, and standard utility knives.

Phillips 66 Company RM and GHD prohibit use of FOBKs on project sites as outlined in the RM Safety Knife Procedure as contained in the P66 Contractor Safety Requirements included in Appendix F. Alternative cutting tools are available for use as outlined in the policy. No FOBK shall be used on a Phillips 66 Company RM site unless no safe and effective substitutes exist. A FOBK may be used at a RM worksite only if the following two conditions are met:

- An evaluation indicates that no safe, suitable alternative exists
- A variance is procured from the Phillips 66 Company RM Site Manager and RM Safety Manager

## **3.16 Electrical Hazards**

Only qualified individuals will be allowed to perform work on electrical circuits or perform electrical work on equipment. No employees shall be permitted to work on any part of an electrical power

circuit unless the person is protected against electric shock by de-energizing the circuit and grounding it, or ensuring that it has been locked and tagged out:

- All electrical wiring and equipment shall be a type listed by Underwriters Laboratories (UL) or Factory Mutual (FM) for the specific application.
- All installations shall comply with the National Electric Code (NEC) and the National Electric Safety Code (NESC).
- All electrical circuits shall be grounded according to NEC and NESC Code. GFCIs shall be used in the absence of properly grounded circuitry or when portable tools must be used around wet areas.
- Generators and like equipment will be grounded in accordance with NEC, unless exempted by NEC 250-6.
- All live wiring or equipment shall be guarded to protect all persons or objects from harm.

# 3.17 Control of Hazardous Energy (LOCK/TAG/TRY)

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

#### **3.18 Excavations**

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

#### 3.19 UST/AST Removals

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

## 3.20 Confined Space Entry

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

## **3.21 Compressed Gas Cylinders**

Compressed gases present several hazards. The cylinder must be properly labeled, identifying the hazardous properties of the gas, such as toxicity, flammability, or the presence of an oxidizer, and a SDS must be supplied by the manufacturer. In addition to the gas hazards, compressed gas cylinders pose other hazards simply because they contain gas under pressure.

Regardless of the properties of the gas, any gas under pressure can explode if the cylinder is improperly stored or handled. Improperly releasing the gas from a compressed gas cylinder is extremely dangerous. A sudden release of the gas can cause a cylinder to become a missile-like projectile, destroying everything in its path. Cylinders have been known to penetrate concrete-block

walls. To prevent such a dangerous situation, there are several general procedures to follow for the safe storage and handling of a compressed gas cylinder:

- Store cylinders in an area specifically designated for that purpose. This area must protect the cylinders from being struck by another object. The area must be well-ventilated, away from sources of heat, and at least 20 feet away from highly combustible materials. Oxidizers must be stored at least 20 feet away from flammable gases.
- Cylinders must not be dropped or allowed to fall. Chain and rack them in an upright position during use and storage.
- When moving a cylinder, even for a short distance, all the valves must be closed, the regulator removed, and the valve cap installed. Never use the valve cap to lift a cylinder. If you are using a crane or some other lifting device to move a cylinder, use a cradle or boat designed for that purpose. Never use a sling or a magnet to move a cylinder.
- Never permit cylinders to contact live electrical equipment or grounding cables.
- Cylinders must be protected from the sun's direct rays, especially in high-temperature climates. Cylinders must also be protected from ice and snow accumulation.
- Before the gas is used, install the proper pressure-reducing regulator on the valve. After installation, verify the regulator is working, all gauges are operating correctly, and all connections are tight to ensure that there are no leaks. When you are ready to use the gas, open the valve with your hands. Never use a wrench or other tool. If you cannot open it with your hands, do not use it.

### **3.22** Fall Hazards

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

## **3.23 Portable Ladders**

Employees who use ladders on work sites must be familiar with safe ladder usage.

- Use the 4-to-1 ratio. Place the ladder so its feet are 1 foot away from what it leans against for every 4 feet in height to the point where the ladder rests. Example: If the top of a 16-foot ladder leans against a wall, its feet should be placed 4 feet from the wall. The "fireman's method" is a convenient way of checking the angle of the ladder. Place your toes against the base of the ladder; fully extend both arms toward the side rail and parallel to the ground. When standing erect you should be able to hold the ladder's side rails.
- Ladders shall not be used in a horizontal position as a platform, runway, scaffold, walkway, or gangplank.
- Do not place a ladder in front of a door that opens toward it unless the door is locked, blocked, or guarded by someone.
- Place a portable ladder so that both side rails have a secure footing. Provide solid footing on soft ground to prevent the ladder from sinking.
- Place the ladder's feet on a substantial and level base, not on a movable object.

- On uneven surfaces, use a block, wedge, or ladder foot.
- On wet or oily pavement, a smooth floor, or an icy or metal surface, the ladder footing must be lashed, blocked, or otherwise secured.
- Do not lean a ladder against unsafe backing, such as loose boxes or barrels.
- When using a ladder for access to another level, securely lash or otherwise fasten the ladder to prevent it from slipping.
- To gain access to a roof or elevated platform, extend the ladder at least three rungs (3 feet) above the point of support.
- Do not attempt to carry tools, notebooks, etc., in one hand while climbing.
- Use a tagline to raise/lower equipment.
- It is permissible to work while standing on a ladder. You should, however, keep one hand on a rung at all times when doing so. Properly secured safety belts may further assist in the prevention of falls. Fall prevention standards apply to working from ladders.
- Only one person on a ladder at a time. On a fixed ladder, as an example, the second person shall not ascend/descend until the first person is safely out of the way.
- Ladders shall not be placed on boxes, barrels, or other unstable bases.
- Ladders shall not be used as guys, braces, or skids, or for other than their intended purposes.
- Ladder access to a work platform or rooftop shall extend at least 3 feet above the height of the area being accessed.
- Ladders must be in good condition or repaired prior to use. Keep ladder rungs clean, free from grease, oil, ice, or other substances that could result in loss of footing.
- Wood ladders must be free from sharp edges, splinters, decay, splitting, or other irregularities or damage.
- Do not paint wood ladders, which can conceal cracks or defects. Clear varnish or protective oils are acceptable ladder treatments.
- Electrical work requires the use of wood or fiberglass ladders. Do not use metal ladders for the performance of such work.

#### Ascending or Descending of Ladders

- Maintain three points of contact at all times when going up or down. If material must be handled, raise or lower it with a rope.
- Always face the ladder when ascending or descending.
- Maintain clean, dry footwear as much as possible to prevent slipping on the rungs.

# 3.24 Slip/Trip/Hit/Fall

Slip/trip/hit/fall injuries are the most frequent of all injuries to workers. They occur for a wide variety of reasons, but can be minimized by the following prudent practices:

- Spot check the work area to identify hazards
- Establish and utilize a pathway free of slip and trip hazards

- Beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain
- Carry only loads you can see over
- Keep work areas clean and free of clutter, especially in storage rooms and walkways
- Communicate hazards to on-site personnel
- Secure all loose clothing and ties, and remove jewelry while around machinery
- Report and/or remove hazards
- Keep a safe buffer zone between workers using equipment and tools

## **3.25 Heat Stress**

#### **Recognition and Symptoms**

Temperature stress is one of the most common illnesses faced by project personnel when working in elevated temperatures and/or humidity. Acclimatization and frequent rest periods must be established for conducting activities where temperature stress may occur. Below are listed signs and symptoms of heat stress. The field team and other project personnel shall review this section, as well as RM Heat and Cold Stress Recommended Practices in P66 Contractor Safety Requirements attached in Appendix F. Personnel should follow appropriate guidelines if any personnel exhibit these symptoms:

- Heat Rash: Redness of skin. Frequent rest and change of clothing.
- **Heat Cramps**: Painful muscle spasms in hands, feet, and/or abdomen. Administer lightly salted water by mouth, unless there are medical restrictions.
- **Heat Exhaustion**: Clammy, moist, pale skin, along with dizziness, nausea, rapid pulse, fainting. Remove to cooler area and administer fluids.
- Heat Stroke: Hot dry skin; red, spotted, or bluish; high body temperature of 104°F; mental confusion; loss of consciousness; convulsions or coma. Immediately cool victim by immersion in cool water. Wrap with wet sheet and sponge with cool liquid while fanning, treat for shock.
   DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.

#### Work Practices

The following procedures will be carried out to reduce heat stress:

- Heat stress monitoring
- Acclimatization
- Work/rest regimes (schedule of breaks) mandatory breaks scheduled in summer months or during high risk activities for heat stress
- Heat stress safety personal protective equipment (cool-vests, bandanas, etc.)
- Liquids that replace electrolytes, water, and salty foods available during rest
- Use of buddy system

#### Acclimatization

The level of heat stress at which excessive heat strain will result depends on the heat tolerance capabilities of the worker. Each worker has an upper limit for heat stress, beyond which the resulting heat strain can cause the worker to become a heat casualty. In most workers, appropriate repeated exposure to elevated heat stress causes a series of physiologic adaptations called acclimatization, whereby the body becomes more efficient in coping with the heat stress. Work/rest regimes should be planned as a component of project preparation and discussed during the daily tailgate safety meetings.

#### Worker Information and Training

All new and current employees who work in areas where there is a reasonable likelihood of heat injury or illness should be kept informed through continuing education programs (e.g., hazards, effects, preventative measures, drug/alcohol interaction).

#### 3.26 Sun Exposure

Overexposure to sunlight is a common concern when field activities occur during warm weather conditions. Overexposure can occur on clear, sunny days as well as on overcast and cloudy days. Ultraviolet (UV) rays from the sun can cause skin damage or sunburn, but can also result in vision problems, allergic reactions, and other skin concerns. Two types of UV rays are emitted from the sun: UVA and UVB rays.

UVB rays cause sunburn, skin cancer, and premature aging of the skin. UVB rays stimulate tanning but are also linked to other problems such as impaired vision, skin rashes, and some allergic and other reactions to certain drugs. Extra care should be taken if activities are to be conducted on or near water. Sunlight reflected off the surface of the water is intensified resulting in accelerated effects. The following steps should be taken to protect against overexposure to sunlight:

- Always Use Sunscreen: Apply a broad spectrum sunscreen with Sun Protection Factor (SPF) of at least 15 or higher liberally on exposed skin. Reapply every 2 hours or more. Even waterproof sunscreen can come off when you towel off or sweat.
- **Cover Up**: Wearing tightly woven, loose-fitting, and full-length clothing is a good way to protect your skin from UV rays.
- Wear a Hat: A hat with a wide brim offers good sun protection to your eyes, ears, face, and the back of your neck areas particularly prone to overexposure to the sun.
- Wear Sunglasses That Block 99 to 100 Percent of UV Radiation: Sunglasses that provide 99 to 100 percent UVA and UVB protection will greatly reduce sun exposure that can lead to cataracts and other eye damage. Check the label when buying sunglasses.
- **Seek Shade**: Shade is a good source of protection, but keep in mind that shade structures (e.g., trees, umbrellas, canopies) do not offer complete sun protection.
- Limit Time in the Midday Sun: The sun's rays are strongest between 10 a.m. and 4 p.m. Whenever possible, limit exposure to the sun during these hours.

# 3.27 Cold Stress

Cold stress is similar to heat stress, in that it is caused by a number of interacting factors including environmental conditions, clothing, and workload, as well as the physical and conditioning characteristics of the individual. Before initiating fieldwork, the field team and other project personnel shall review this section, as well as RM Heat and Cold Stress Recommended Practices included in Appendix F. Fatal exposures to cold have been reported in employees failing to escape from low environmental air temperatures or from immersion in low temperature water. Hypothermia, a condition in which the body's deep core temperature falls significantly below 98.6°F (37°C), can be life threatening. A drop in core temperature to 95°F (35°C) or lower must be prevented.

Air temperature is not sufficient to determine the cold hazard of the work environment. The wind chill must be considered as it contributes to the effective temperature and insulating capabilities of clothing. The equivalent chill temperature should be used when estimating the combined cooling effect of wind and low air temperatures on exposed skin or when determining clothing insulation requirements to maintain the body's core temperature.

The body's physiologic defense against cold includes constriction of the blood vessels, inhibition of the sweat glands to prevent loss of heat via evaporation, glucose production, and involuntary shivering to produce heat by rapid muscle contraction.

The frequency of incidents increases with cold temperature exposures as the body's nerve impulses slow down, individuals react sluggishly, and numb extremities make for increased clumsiness. Additional safety hazards include ice, snow blindness, reflections from snow, and possible skin burns from contact with cold metal.

Pain in the extremities may be the first early warning of danger to cold stress. During exposure to cold, maximum severe shivering develops when the body temperature has fallen to 95°F (35°C). This must be taken as a sign of danger to the employees on site, and cold exposures should be immediately terminated for any employee when severe shivering becomes evident. Useful physical or mental work is limited when severe shivering occurs.

#### **Predisposing Factors for Cold Stress**

Certain predisposing factors make an individual more susceptible to cold stress. The project team members are responsible for informing the Site HSE Officer/SS to monitor an individual, if necessary, or use other means of preventing/reducing the individual's likelihood of experiencing a cold related illness or disorder.

Predisposing factors that will increase an individual's susceptibility to cold stress are listed below:

- **Dehydration:** The use of diuretics and/or alcohol, or diarrhea can cause dehydration. Dehydration reduces blood circulation to the extremities.
- Fatigue during Physical Activity: Exhaustion reduces the body's ability to constrict blood vessels. This results in the blood circulation occurring closer to the surface of the skin and the rapid loss of body heat.
- Age: Some older and very young individuals may have an impaired ability to sense cold.
- **Poor Circulation:** Vasoconstriction of peripheral vessels reduces blood flow to the skin surface.

- **Heavy Work Load:** Heavy workloads generate metabolic heat and make an individual perspire even in extremely cold environments. If perspiration is absorbed by the individual's clothing and is in contact with the skin, cooling of the body will occur.
- **Use of PPE:** PPE usage that traps sweat inside the PPE may increase an individual's susceptibility to cold stress.
- Lack of Acclimatization: Acclimatization, the gradual introduction of workers into a cold environment, allows the body to physiologically adjust to cold working conditions.
- **History of Cold Injury:** Previous injury from cold exposures may result in increased cold sensitivity.

#### **Prevention of Cold Stress**

A variety of measures can be implemented to prevent or reduce the likelihood of employees developing cold related ailments and disorders. These include acclimatization, fluid and electrolyte replenishment, eating a well-balanced diet, wearing warm clothing, the provision of shelter from the cold, thermal insulation of metal surfaces, adjusting work schedules, and employee education.

- Acclimatization: Acclimatization is the gradual introduction of workers into the cold environment to allow their bodies to physiologically adjust to cold working conditions. However, the physiological changes are usually minor and require repeated uncomfortably cold exposures to induce them.
- Fluid and Electrolyte Replenishment: Cold, dry air can cause employees to lose significant amounts of water through the skin and lungs. Dehydration affects the flow of blood to the extremities and increases the risk of cold injury. Warm, sweet, caffeine-free, non-alcoholic drinks and soup are good sources to replenish body fluids.
- **Eating a Well-Balanced Diet:** Restricted diets including low salt diets can deprive the body of elements needed to withstand cold stress. Eat high-energy foods throughout the day.
- Warm Clothing: Maintaining air space between the body and outer layers of clothing is beneficial in order to retain body heat. However, the insulating effect provided by such air spaces is lost when the skin or clothing is wet.
- Work/Rest Regimes: Schedule work during the warmest part of the day, if possible. Rotate personnel and adjust the work/rest schedule to enable employees to recover from the effects of cold stress.

The parts of the body most important to keep warm are the feet, hands, head, and face. As much as 40 percent of body heat can be lost when the head is exposed.

## 3.28 Hot Work Hazards

Personnel conducting hot work, including burning, pipe welding, cutting, brazing, grinding or other activities capable of producing ignition sources, or personnel working in the vicinity of hot work, must adhere to the following practices:

- No open flames will be used without prior approval by SS.
- Torches will be equipped with anti-flashback devices.

- Where electrode holders are left unattended, electrodes will be removed and the holders will be replaced so they cannot make electrical contact.
- All arc welding and cutting cables will be completely insulated. No repairs or splices will be located within 10 feet of the electrode holder, except where splices are insulated equal to the insulation of the original cable. Defective cable will be repaired or replaced.
- No welding, cutting, or hot work will be conducted on used drums, tanks, or containers until they have been cleaned and purged.
- Only employees with documented training and work experience in these activities shall conduct hot work.
- At a minimum, a 2A/10BC-type fire extinguisher and a first aid kit must be available. When hot work is underway, and for an agreed upon period afterwards, a fire watch must be maintained.
- Employees involved in the operation shall wear appropriate personal protective equipment specific to the task, such as a welder's helmet with an appropriate eye shade, leather or heavy duty cloth gloves, coveralls or a long-sleeved shirt and pants to prevent skin exposure, steel toed or safety shoes, hearing protection, etc.
- Appropriate activity segregation equipment, such as welding screens for welding operations, should be erected whenever practical to isolate the hot work from the remainder of the site activities and site personnel.
- The area should be cleared of any flammable and combustible materials before hot work begins.

## 3.29 Working Over or Near Water

The PM has evaluated this condition and determined that it is not a hazard for this site or project. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will by revised to include this section. Those affected will be notified.

# 3.30 Special Work Conditions/Situations

GHD may be asked to conduct work that requires special precautions/considerations due to the following factors:

•	Project site is in an area known for high crime or violence activity.	Mandatory: No working alone, police or security escort.
•	Entry into abandoned buildings.	Mandatory: No working alone, call in procedure.
•	Project work involving single employees (lone worker)	Mandatory: Call in procedure.

If these situations are possible, please consult with your RSHM to develop a plan.

## **3.31 Aggressive or Menacing Behavior**

When confronted by an individual whose behavior becomes aggressive or menacing, staff should remain as calm as possible. Avoid arguing with or physically confronting the individual. Attempt to

distance yourself from the individual. Advise others in the area to leave the scene and request police assistance by having someone call 911. Use the team approach. A staff member who is physically unable to break away from an attacker should shout for help.

The use of physical force is justified when a person believes that such force is necessary to protect himself or herself against the use or imminent use of unlawful physical force by another person. The use of physical force is also justified in the defense of another party, such as a co-worker, who is being subjected to unlawful physical force. Staff members can use any technique of legal self-defense in order to halt or distract an attacker until law officers arrive on the scene.

Should an aggressor only be interested in the taking or damaging of property, do not interfere. Obtain a description of the individual to provide to local authorities, including height, weight, race, sex, clothing, accent, unusual markings such as tattoos, facial piercings, scars, hair color, and weapon, if any.

Follow the procedure for incident reporting and investigation in Section 7.2 of this document.

#### **3.32 Social Protection**

Anti-social behavior means different things to different people – noisy neighbors who ruin the lives of those around them, 'crack houses' run by drug dealers, loitering by drunkards, people begging by cash-points, abandoned cars, litter and graffiti, young people using air guns to threaten and intimidate, or people using fireworks as weapons.

When in this situation, there is no single strategy that always works. Remember these tips when faced with work conditions in volatile neighborhoods:

#### **Street Precautions**

When walking to and from your vehicle, or in and around the work site:

- Be alert to your surroundings and the people around you, especially if you are alone or it is dark
- Whenever possible, travel with a colleague
- Stay in well lighted areas as much as possible
- Walk close to the curb; avoid doorways, bushes, and alleys where someone could hide
- Walk confidently, and at a steady pace; make eye contact with people when walking
- Do not respond to conversation from strangers on the street, continue walking

#### Harm Reduction

Do as much as you can to avoid a confrontation - "anticipation and avoidance" are the key words.

- If you get caught up in a situation, try to talk to an aggressor without provoking them.
- Practice relaxation, as appearing fearful or stressed can actually provoke an attack.
- Remember that body language is important in aggressive situations, so maintain a comfortable distance between you and the aggressor.

- It may be more advisable to submit than to resist and risk severe injury or death. You will have to make this decision based on the circumstances. Be especially careful if your attacker has a weapon.
- Steady yourself if danger threatens; Panic can disable you, so again it's useful to learn how to keep control in a difficult situation.
- If you must fight back, adopt what police term the "bash and dash" approach. Primary targets are the eyes, nose, mouth, ears, throat, groin, knees or shins; choose whichever is easiest to get to.
- Be aware that your attacker might be stronger than you, or may take what you are using in self-defense and use it against you. It is often better just to shout loudly and run away.
- Shout 'fire' rather than 'help' it can get more results.
- Stay alert and observant so that you can better describe your attacker and the assault to the police.

If someone tries to take something from you by force, it may be best to give it to them. This will help you avoid getting injured.

#### **Drug Activity**

#### The safe retrieval and disposal of used hypodermic needles and syringes:

GHD employees must not handle or remove any hypodermic needles or syringes. You should contact the local Police Department, Fire Department or Health Department for removal from the jobsite.

## *If you are injured by a discarded needle, you can receive a vaccination against Hepatitis B within 48 hours of the incident.*

#### First Aid Treatment:

If an accident occurs where a needle or other sharp object has punctured the skin, then the following advice is recommended.

#### The injured person should:

- Encourage the wound to bleed gently
- Wash well with soap under cold running water
- Cover the wound with a waterproof dressing
- Seek medical attention as soon as possible
- Inform your Supervisor and/or Project Manager
- Complete the accident/incident form

#### Car Jacking

You can help prevent yourself being a victim of car-jacking by:

• Keeping your doors locked in built-up areas, and trying to keep the windows wound up, especially at traffic lights

- Being aware of what people are doing around you
- Using the middle lane, if there is one, when waiting at junctions or lights, so that your car is harder to get to from the pavement
- Not stopping to help someone who has broken down (if you really want to help, pull over at the next garage or police station and call for help)
- Driving to the next garage or police station and reporting them if someone tries to pull you over for no reason

Sometimes, car-jackers may 'accidentally' bump into your car, aiming to get you out of the car so they can steal it. If this happens, you may choose not to get out of the car, especially if you do not think it is a genuine accident. Wind the window down a little bit to talk to them if you want to.

#### Security Measures

A site assessment should be made prior to performing work in high risk areas for violent crime. Additionally, it may be important to gather as much information as possible from the client, describing the location and social conditions of the area where work will be performed.

In the event it has been determined that this work will occur in an area of high risk, consideration shall be given to providing on-site security for the protection of the employee. This option may include services from a security agency, local law enforcement (if available), or the services of an off duty law enforcement officer. The Project Manager and/or Project Coordinator shall be contacted and provide authorization prior to making these arrangements.

# 3.33 Use of Battery Operated Mobile Devices

The use of non-intrinsically safe battery-operated mobile devices (defined as mobile cell phones, two-way radios, laptop computers, cameras, and other communication, diagnostic, and data gathering devices) should only be used at permitted locations on Phillips 66 sites. If at an active facility, approval should be obtained prior to use. Non-intrinsically safe battery-operated mobile devices may be used at sites to diagnose, repair, and maintain dispensers, UST monitoring and leak detection equipment, or remediation equipment, provided all of the conditions are met:

- The non-intrinsically safe battery-operated mobile device is not connected to an AC power source
- Laptop use is restricted to diagnostic testing and data gathering as recommended by the equipment manufacturer (Gilbarco Veeder Root, Dresser Wayne, etc.)
- All Safe System of Work (SSoW) requirements must be followed
- The Job Hazard Analysis (JHA) for the task must include the use of a non-intrinsically safe battery operated mobile device
- The work area is properly secured and barricaded to restrict access to unauthorized personnel, pedestrians, and vehicle traffic
- If the non-intrinsically safe battery-operated mobile device is used in the immediate area of the gasoline product dispensing system, the fuel system must be shut down, locked, and tagged out

• If non-intrinsically safe battery-operated mobile device use is occurring on a fuel dispenser, then both sides of the dispenser must be shut down, locked, and tagged out

# **3.34 Biological Hazards**

GHD employees conduct numerous project activities that may encounter biological hazards, including bloodborne pathogens, insects, spiders, scorpions, rodents, snakes, and large predators. This section identifies precautions to be taken if these hazards are encountered.

# 3.35 Vegetation Overgrowth

Overgrown weeds, bushes, trees, grass, and other vegetation are fire and safety hazards. A number of hidden hazards may not be immediately recognized due to the overgrowth of vegetation in areas where field activities may occur, including discarded junk, litter, and debris. Construction materials such as boards, nails, concrete, and other debris may be hidden beneath tall grass, weeds, and bushes. Other hazards may include steep slopes, potholes, trenches, soft spots, dips, etc., all dangerously concealed from the view of the individual walking or operating motorized equipment in the area. Additionally, biological hazards such as snakes, ticks, chiggers, and mosquitoes may be present, as they breed in overgrowth conditions.

Here are some simple actions you can take:

- Assess the work area and determine if the area requires vegetation clearance. Consider that overgrowth extending above the lowest level of motorized equipment (i.e., bumper or fender) or 6 inches above your ankle has hidden hazards that you will not be able to readily identify.
- Determine if the area is safe to walk or whether you need motorized equipment. Consider the limitations of the equipment.
- Identify slip, trip, and fall hazards and remove from the general work area. Remember to give adequate clearance so that the items being removed do not pose future hazards.
- Adequately protect yourself against the hazards by wearing boots that protect the ankles, wearing long pants, and using insecticides.
- Consider the limitations of manual or mechanical equipment for the clearance of overgrowth, particularly the safety hazards when using sling blades, machetes, weed eaters, bush hogs, or other brush removing equipment.

Before taking any action, determine whether there any ecological issues that would affect or prevent the removal of overgrowth in protected areas such as wetlands, wildlife habitats, or sanctuaries for endangered and/or protected species.

# **3.36 Poisonous Plants**

Common **poison ivy** grows as a small plant, a vine, and a shrub. Poison ivy occurs in every state. The leaves always consist of three glossy leaflets. **Poison sumac** grows as a woody shrub or small tree 5 to 25 feet tall. It usually contains nine leaves, with eight paired leaves and one on top, and is common in swampy areas. The plants are potent sensitizers and can cause a mild to severe allergic reaction, referred to as "contact dermatitis." *These plants are found in the U.S. and Canada.* 

Dermatitis, in Rhus-sensitive persons, may result from contact with the milky sap found in the roots, stems, leaves, and fruit, and may be carried by contacted animals, equipment, or apparel.

The best form of prevention is to avoid contact. Wearing long sleeves, gloves, and disposable clothing, such as Tyvek, is recommended in high-risk areas to avoid exposure from contaminated apparel. Barrier creams and cleaners are also recommended.

#### 3.37 Insects

#### **Ticks**

Ticks are blood feeding external parasites of mammals, birds, and reptiles throughout the world. Some human diseases of current interest in the United States caused by tick-borne pathogens include Lyme disease, ehrlichiosis, asbestosis, Rocky Mountain spotted fever, tularemia, and tick-borne relapsing fever. Lyme disease is caused by a bacterial parasite called spirochete and is spread by infected ticks that live in and near wooded areas, tall grass, and brush. The ticks that cause the disease in the Northeast and Midwest are often no bigger than a poppy seed or a comma in newsprint. The peak months for human infection are June through October. The prevention and treatment of these diseases are similar to those of Lyme disease.

#### Prevention

Preventative measures include wearing light-colored clothing, keeping clothing buttoned, tucking pant legs in socks, and keeping shirttails tucked in. Periodic checks for ticks should be made during the day, and especially at night. Hair should also be checked by parting it and combing through it to make sure that no ticks have attached to the scalp. Also, check clothing when it is first removed, before ticks have a chance to crawl off. A shower or bath should be taken as soon as possible after leaving the site for the day.

The most common repellent recommended for ticks is N,N-dimethyl-m-toluamide, or DEET. It is important to follow the manufacturer's instructions found on the container with all insecticides, especially those containing DEET.

In general, DEET insect repellent should only be applied to clothing, not directly on the skin. Do not apply to sunburns, cuts, or abrasions. Make sure to wash your hands after applying DEET. The DEET user is required to read the insect repellant label and/or SDS for safe use requirements. If ticks are not responding to DEET or other safety methods, then the PM and RSHM are to be notified and additional safety controls may be utilized.

#### Removal

The best way to remove a tick is removal by tweezers. If tweezers are not available, cover your fingers (tissue paper) while grasping the tick. It is important to grasp the tick as close as possible to the site of attachment and use a firm steady pull to remove it. When removing the tick, be certain to remove all the mouth parts from your skin so as not to cause irritation or infection. Wash hands immediately after with soap and water, and apply antiseptic to the area where tick was removed. Get medical attention if necessary.

#### Symptoms of Lyme Disease

The first symptoms of Lyme disease usually appear from 2 days to a few weeks after a person is bitten by an infected tick. Symptoms usually consist of a ring-like red rash on the skin where the tick attached, and is often bulls eye-like with red on the outside and clear in the center. The rash may be warm, itchy, tender, and/or "doughy" and appears in only 60 to 80 percent of infected persons. An

infected person also has flu-like symptoms of fever, fatigue, chills, headaches, a stiff neck, and muscle aches and pains (especially knees). Rashes may be found some distance away from original rash. Symptoms often disappear after a few weeks.

#### Bees, Wasps, and Yellow Jackets

Stinging insects are members of the order Hymenoptera of the class Insecta. There are two major subgroups: aphids (honeybees and bumblebees) and vespids (wasps, yellow jackets, and hornets). Aphids are docile and usually do not sting unless provoked. The stinger of the honeybee has multiple barbs, which usually detach after a sting. Vespids have few barbs and can inflict multiple stings.

Types of stinging insects that might be encountered on this project site may include:

- Carpenter bees
- Africanized killer bees
- Honeybees

- Bumblebees
- Cicada killer wasps
- Paper wasps

- Mud dauber wasps
- Giant hornets
- Yellow jackets

#### **Symptoms**

If you are stung, three types of reactions are possible: a normal, a toxic, or an allergic reaction.

- **Normal Reaction**: Only lasts a few hours and consists of pain, redness, swelling, itching, and warmth near the sting area
- **Toxic Reaction**: Will last for several days, results from multiple stings, and may cause cramps, headaches, fever, and drowsiness
- Allergic Reaction: Can cause hives, itching, swelling, tightness in the chest area, and a possibility of breathing difficulties, dizziness, unconsciousness, and cardiac arrest.

The stingers of many Hymenoptera may remain in the skin and should be removed as quickly as possible without concern for the method of removal. An ice cube placed over the sting will reduce pain; aspirin may also be useful. Persons with known hypersensitivity to such stings should carry a kit containing epinephrine in a prefilled syringe. Antihistamines may help decrease hives and angioedema. Persons who have severe symptoms of anaphylaxis, have positive venom skin test results, and are at risk for subsequent stings should receive immunotherapy regardless of age or time since anaphylaxis.

#### Precautions

The following precautions can help you avoid stings. Try to wear light colored clothing and shy away from dark or floral prints. Avoid wearing perfumes, hairsprays, colognes, and scented deodorants while working outside. If eating outside, keep all food and drinks covered; sweet foods and strong scents attract stinging insects as well. Never swat or swing at the insect; it is best to wait for it to leave, softly blow it away, or gently brush it aside. Seek medical attention when the reaction to a sting includes swelling, itching, dizziness, or shortness of breath.

If physical control measures are not effective, use a pesticide that will have a minimal impact on both you and the environment.

#### Fire Ants

Fire ants are reddish-brown in color and range from 1/8 inch to 3/8 inch in length. When a fire ant stings an individual, the individual is rarely only stung once. Most fire ant stings result in a raised welt with a white pustule. If stung by a fire ant, continue to observe the welt and try to prevent secondary infection by keeping the welt intact. However, some individuals may have an allergic reaction to a fire ant sting and require immediate medical attention. Pesticides and even hot water can be used to kill fire ant colonies. *Fire ants are normally seen in the southern states.* 

#### **Mosquitoes**

Mosquitoes are common pests that can be found in any state and any work environment where warm, humid conditions exist. Mosquitoes can pass along diseases such as West Nile virus and malaria. Several different methods can be used to control adult mosquito populations: repellants such as DEET, mosquito traps, foggers, and vegetation and water management. *Mosquitoes are found from the tropics to the Arctic Circle and from lowlands to the peaks of high mountains*.

#### 3.38 Poisonous Spiders

#### **Black Widow**

Black Widow spiders are not usually deadly (especially to adults) and only the female is venomous. The female spider is shiny black, usually with a reddish hourglass shape on the underside of her spherical abdomen. Her body is about 1.5 inches long, while the adult male's is approximately half that size. The spider's span ranges from 1 to 3 inches. The adult males are harmless, have longer legs, and usually have yellow and red bands and spots over their back, while the young black widows are colored orange and white. The bite of a black widow is often not painful and may go unnoticed. However, the poison injected by the spider's bite can cause severe reactions in certain individuals.

#### Symptoms

Symptoms include abdominal pain, profuse sweating, swelling of the eyelids, pains to muscles or the soles of the feet, salivation and dry-mouth (alternating), and paralysis of the diaphragm. If a person is bitten, they should seek immediate medical attention. Clean the area of the bite with soap and water. Apply a cool compress to the bite location. Keep effected limb elevated to about heart level. Ask a doctor if Tylenol or aspirin can be taken to relieve minor symptoms. Additional information can be obtained from the Poison Center (1-800-222-1222).

#### **Brown Recluse**

Brown recluse spiders are usually light brown in color, but in some instances they may be darker. Brown recluse spiders are highly venomous spiders, native to the United States, and found coast to coast. The brown recluse can vary in size, but some can obtain bodies of 5/8 inches in length with a leg span of 1 1/2 inches in diameter. They can be identified by their three pairs of eyes along the head area and their fiddle shaped markings on the back. Most brown recluse bites are defensive rather than offensive. They generally only bite when they feel threatened.

#### **Symptoms**

If bitten by a brown recluse, an individual may experience open, ulcerated sores, which when left untreated may become infected and cause tissue necrosis. If an individual believes a spider has bitten them, they need to seek medical attention as soon as possible. In order to minimize the occurrence of brown recluse bites, individuals should shake their clothing and shoes thoroughly, eliminate the presence of cluttered areas, and spray the building perimeters with pesticides.

#### **3.39 Threatening Dogs**

If you are approached by a frightened or menacing dog:

- Do not attempt to run and don't turn your back
- Stay quiet, and remember to breathe
- Be still, with arms at sides or folded over chest with hands in fists
- Slowly walk away sideways
- Don't stare a dog in the eyes, as this will be interpreted as a threat
- Avoid eye contact
- If you have a jacket, you could wrap it around your arm and should the dog snap, take the bite harmlessly

#### 3.40 Rodents

#### Rodentia: (rats, mice, beavers, squirrels, guinea pigs, capybaras, coypu)

Rodents, or Rodentia, are the most abundant order of mammals. There are hundreds of species of rats; the most common are the black and brown rat.

The **Brown Rat** has small ears, blunt nose, and short hair. It is approximately 14 to 18 inches long (with tail). They frequently infest garbage/rubbish, slaughterhouses, domestic dwellings, warehouses, shops, and supermarkets; they also frequent any space with an easy meal and potential nesting sites.

The **Black Rat** can be identified by its tail, which is always longer than the combined length of the head and body. It is also slimmer and more agile than the Norwegian or Brown rat. Its size varies according to its environment and food supply.

The **House Mouse** has the amazing ability to adapt and now can frequently be found in human dwellings. In buildings, mice will live anywhere and they are very difficult to keep out. Mice are also totally omnivorous; in other words, they will eat anything.

Rats and mice often become a serious problem in cold winter months when they seek food and warmth inside buildings. They may suddenly appear in large numbers when excavation work disturbs their in-ground nesting locations or their food source is changed.

There are six major problems caused by rats and mice:

1. They eat food and contaminate it with urine and excrement.

- 2. They gnaw into materials such as paper, books, wood, or upholstery, which they use as nest material. They also gnaw plastic, cinder blocks, soft metals such as lead and aluminum, and wiring, which may cause a fire hazard.
- 3. Rats occasionally bite people and may kill small animals.
- 4. They, or the parasites they carry (such as fleas, mites, and worms), spread many diseases such as salmonella, trichinosis, rat bite fever, hantavirus, Weil's disease, and the bubonic plague.
- 5. Rats can damage ornamental plants by burrowing among the roots or feeding on new growth or twigs. They also eat some garden vegetables, such as corn and squash.
- 6. Rats and mice are socially unacceptable. These rodents have been a problem for centuries, chiefly because they have an incredible ability to survive and are so difficult to eliminate. In addition, they are extremely compatible with human behavior and needs.

# 3.41 Snakes

Snakes may be found in any region of the country. While many snakes encountered are not venomous, a few are, so all snakes should be given a wide berth. Of the 7,000 venomous snakebites reported each year, only about 15 prove to be fatal, so your chances of survival are extremely high. The usual snake encounter is one in which they see you before you see them, and they slither away from you quickly, startling you. If you see a snake, back away from it slowly and do not touch it. If you or someone you know are bitten, try to see and remember the color and shape of the snake, which can help with treatment of the snakebite.

Venomous snakes include the coral snake and pit vipers, such as the cottonmouth (water moccasin), copperhead, and rattlesnake. The venom of pit vipers is primarily *hematoxic* because it acts upon the victim's blood system. This venom breaks down blood cells and blood vessels and affects heart action. Bite victims experience severe burning pain, localized swelling and discoloration for the first 3 to 30 minutes, followed by nausea, vomiting, occasional diarrhea, and usually shock.

#### **Preventing Snakebites**

The best ways to prevent snakebites are to watch where you step, put your hands, or sit down. Poisonous snakes live on or near the ground and often like rocks, woodpiles, and other spots that offer both a place to sun and a place to hide. Most bites occur in and around the ankle. About 99 percent of all bites occur below the knee, except when someone accidentally picks up or falls on the snake.

Watching where you step and wearing boots in tall grass can prevent most snakebites. Snake chaps can also help protect against snakebites.

Signals that indicate a poisonous snakebite include:

- One or two distinct puncture wounds, which may or may not bleed the exception is the coral snake, whose teeth leave a semicircular mark
- Severe pain and burning at the wound site immediately after or within 4 hours of the incident
- Swelling and discoloration at the wound site immediately after or within 4 hours of the incident

#### **Emergency First Aid for Poisonous Snakebite**

Although it is important to obtain medical aid immediately, emergency first aid can slow the spread of poison from the bite. Remain calm and avoid unnecessary movement, especially if someone is with you. The rate of venom distribution throughout your body will be slower if you are still and quiet. *Do not* use home remedies, and *do not* drink alcoholic beverages.

To care for a bite from a pit viper, such as a rattlesnake, copperhead, or cottonmouth, follow these steps:

- Call 9-1-1 or the local emergency number
- Wash the wound
- Keep the injured area still and lower than the heart; if possible, carry a person who must be taken to a medical facility or have him or her walk slowly
- Do not apply ice
- Do not cut the wound
- Do not apply suction
- Do not apply a tourniquet
- Do not use electric shock, such as from a car battery

Care for a bite from an elapid snake, such as a coral snake, is the same as for a pit viper, except that after washing the wound you should apply an elastic roller bandage by following these steps (see Section 10 for more information on using an elastic bandage):

- Check for feeling, warmth, and color of the limb beyond where you will be placing the bandage by noting changes in skin color and temperature.
- Place the end of the bandage against the skin and use overlapping turns.
- Gently stretch the bandage as you continue wrapping. The wrap should cover a long body section, such as an arm or a calf, beginning at the point farthest from the heart. For a joint like a knee or ankle, use figure-eight turns to support the joint.
- Always check the area above and below the injury site for feeling, warmth, and color, especially fingers and toes, after you have applied an elastic roller bandage. By checking before and after bandaging, you will be able to tell if any tingling or numbness is from the bandaging or the injury.
- Check the snugness of the bandaging—a finger should easily, but not loosely, pass under the bandage.
- Keep the injured area still and lower than the heart. If possible, carry a person who must be taken to a medical facility or have him or her walk slowly.
- Do not apply ice.
- Do not cut the wound.
- Do not apply suction.
- Do not apply a tourniquet.

• Do not use electric shock, such as from a car battery.

## 3.42 Scorpions

Forty different types of scorpions are found in the U.S. *All the different types are located in the southern states.* 

The Arizona bark scorpion is found over much of Arizona; small populations occur in southeastern California and southern Utah. They are usually yellow or brownish-yellow with dark longitudinal stripes, and grow to around 3 inches in length. Their pincers are long and slender as opposed to large and lobster-like. Nearly all deaths from this scorpion have been in small children, the elderly, and the severely allergic.

For stings from the Arizona bark scorpion, the site will be immediately painful and difficult to even touch. This will likely be accompanied by swelling, numbness, frothing at the mouth, difficulty breathing, muscle twitching, convulsions, and possibly respiratory failure.

Wind scorpions, including sun scorpions, are easily recognized by the pair of large, pincer-like chelicerae on the head in front of the mouth and by the slight, waistlike constriction near the middle of the body. Unlike the broadly joined cephalothorax and abdomen of scorpions, windscorpions have three distinct body regions - a segmented cephalothoracic area with two eyes at the front margin, a three-segmented thorax, and a ten-segmented abdomen.

Death by a scorpion sting, if it occurs, is the result of heart or respiratory failure some hours after the incident.

## 3.43 Bloodborne Pathogens

Hepatitis and other communicable diseases are largely transmitted through exposure to bodily fluids containing the hepatitis virus, which could be found on refuse encountered in subsurface investigations. This includes activities occurring at landfills, sewage treatment facilities, sewers, topical spreading of treated waste and medical wastes (e.g., contaminated needles and syringes). Individuals performing tasks for these types of project should consult with their physicians and be properly vaccinated. The primary method of transmission depends on the prevalence of the disease in a given area.

**Hepatitis A** is a liver disease caused by the hepatitis A virus. Hepatitis A can affect anyone and can occur in situations ranging from isolated cases of disease to widespread epidemics.

**Hepatitis B** is a serious disease caused by a virus that attacks the liver. The virus, which is called hepatitis B virus (HBV), can cause lifelong infection, cirrhosis (scarring) of the liver, liver cancer, liver failure, and death.

**Hepatitis C** is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have the disease. HCV is spread by contact with the blood of an infected person.

**Hepatitis D** is a liver disease caused by the hepatitis D virus (HDV), a defective virus that needs the hepatitis B virus to exist. HDV is found in the blood of persons infected with the virus.

**Hepatitis E** is a liver disease caused by the hepatitis E virus (HEV) and is transmitted in much the same way as hepatitis A virus. Hepatitis E, however, does not often occur in North America.

#### Prevention

Preventative measures include wearing appropriate PPE: leather work gloves, a long sleeved shirt, and safety footwear. Several vaccines have been developed for the prevention of hepatitis B and C virus infection. Vaccines rely on the use of one of the viral proteins (hepatitis B surface antigen or HBsAg). The vaccine was originally prepared from plasma obtained from patients who had long-standing hepatitis B virus infection. However, currently these are more often made using recombinant technology, though plasma-derived vaccines continue to be used; the two types of vaccines are equally effective and safe.

# 4. Personal Protective Equipment (PPE)

#### 4.1 General

This section shall cover the applicable personal protective equipment (PPE) requirements, which shall include eye, face, hand, head, foot, and respiratory protection. In addition, for projects operating at Phillips 66 Company facilities, additional site-specific PPE may be required.

The purpose of PPE is to shield or isolate individuals from the chemical and physical hazards that may be encountered during work activities.

## **4.2** Types of Personal Protective Equipment (PPE)

The type of PPE required for a project will vary based on the level of protection required to protect the employee from physical, chemical, biological, and thermal hazards. P66 RM 005 Hand Protection Standard is the minimum standard that MUST be adhered to at all times working on a P66 site. One key element is that Cut Resistant Gloves MUST be worn at ALL time within work zones Cotton or leather gloves are NOT PERMITTED on P66 sites. PPE for each task is outlined on each tasks respective JHA (Appendix B).

# 4.3 Types of Protective Material

Protective clothing is constructed of a variety of different materials for protection against exposure to specific chemicals. No universal protective material exists. All will decompose, be permeated, or otherwise fail to protect under certain circumstances.

Fortunately, most manufacturers list guidelines for the use of their products. These guidelines usually concern gloves or coveralls and generally only measure rate of degradation (failure to maintain structure). It should be noted that a protective material may not necessarily degrade but may allow a particular chemical to permeate its surface. For this reason, guidelines must be used with caution. When permeation tables are available, they should be used in conjunction with degradation tables.

In order to obtain optimum usage from PPE, the following procedures are to be followed by all site personnel using PPE:

• When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift

- Inspect all clothing, gloves, and boots both prior to and during use for
  - Imperfect seams
  - Non-uniform coatings
  - Tears
  - Poorly functioning closures
- Inspect reusable garments, boots, and gloves both prior to and during use for
  - Visible signs of chemical permeation
  - Swelling
  - Discoloration
  - Stiffness
  - Brittleness
  - Cracks
  - Any sign of puncture
  - Any sign of abrasion

Reusable gloves, boots, or coveralls exhibiting any of the characteristics listed above will be discarded. PPE used in areas known or suspected to exhibit elevated concentrations of chemicals will not be reused.

# 4.4 Gloves

Hand protection is required by all on-site personnel at all times. The Phillips 66 RM Section 20.5 of the Contractor Safety Requirements Hand Protection outlines the glove requirements for specific tasks and will be adhered to at all times while on the Site. Gloves are required to be worn at all times inside the work/exclusion zone(s). Personnel shall wear hand protection appropriate to the hazard. Phillips 66 Company Remediation sites have many ubiquitous cut and puncture hazards; therefore a cut and puncture resistant glove shall be the primary choice for day to day use. Consult applicable Safety Data Sheets when working with chemicals to assist with determining appropriate glove material and type.

# 4.5 **Respiratory Protection**

Respiratory protection may be worn by personnel during project activities. The PM has evaluated this condition and determined that it is not a hazard for this Site or project. The PPE level for this site is level D. If conditions change, SWA will be exercised. The PM, SS, and RSHM will review the changes and the HASP will be revised to include this section. Those affected will be notified.

# 4.6 **Respirator Cleaning**

Respiratory equipment and other non-disposable equipment will be fully decontaminated and then placed in a clean storage area. Respirator decontamination will be conducted at a minimum once daily. Face pieces will be disassembled, the cartridges thrown away, and all other parts placed in a cleansing solution. After an appropriate amount of time in the solution, the parts will be removed and re-seated with tap water.

Face pieces will be allowed to air dry before being placed in sanitized bags and stored in a clean area.

# 4.7 Levels of Protection

The level of protection must correspond to the level of hazard known or suspected in the specific work area. PPE has been selected with specific considerations to the hazards associated with site activities. The specific PPE to be used for each activity is outlined in each JHA table located in Appendix B.

- All PPE will be disposed of and/or decontaminated at the conclusion of each workday as described in Section 6.4. Decontamination procedures will follow the concept of decontaminating the most contaminated PPE first.
- All disposable equipment shall be removed before meal breaks and at the conclusion of the workday, and replaced with new equipment prior to commencing work.
- Eating, drinking, chewing gum or tobacco, and smoking are prohibited while working in areas where the potential for chemical and/or explosive hazards may be present. Personnel must wash thoroughly before initiating any of the aforementioned activities

#### LEVEL D PROTECTION

The minimum level of protection that will be required for all Site personnel will be Level D. The following equipment will be used:

- i) Work clothing as prescribed by the weather
- ii) Steel toe work boots, meeting American National Standard Institute (ANSI) Z41
- iii) Safety glasses or goggles, meeting ANSI Z87
- iv) Gloves prescribed by RM Contractor Safety Requirements Section 20.5
- v) FRC/Nomex Coveralls with reflective striping
- vi) Hardhat, meeting ANSI Z89
- vii) Hearing protection (if noise levels exceed 85 dBA, then hearing protection with a USEPA NRR of at least 20 dBA must be used)

## MODIFIED LEVEL D PROTECTION

Modified Level D will be used when airborne contaminants are not present at levels of concern, but Site activities present an increased potential for skin contact with hazardous materials. Modified Level D may consist of:

i) Items listed for Level D above

- ii) Face shield in addition to safety glasses or goggles when projectiles and/or splashing liquids pose a hazard
- iii) Nitrile gloves over gloves prescribed by RM Contractor Safety Requirements Section 20.5

# **4.8 Reassessment of Protection Levels**

Protection levels provided by PPE selection shall be upgraded or downgraded based upon a change in site conditions or the review of the results of air monitoring or the initial exposure assessment-monitoring program, if one was conducted.

When a significant change occurs, the hazards shall be reassessed. Some indicators of the need for reassessment are:

- Commencement of a new work phase
- Change in job tasks during a work phase
- Change of season/weather
- Temperature extremes or individual medical considerations limit the effectiveness of PPE
- Chemicals other than those expected to be encountered are identified
- Change in ambient levels of chemicals
- Change in work scope, which affects the degree of contact with areas of potentially elevated chemical presence

All proposed changes to protection levels and PPE requirements will be reviewed and approved prior to their implementation by the SS.

# 5. Air Monitoring Program

Inhalation hazards are caused from the intake of vapors and contaminated dust. Air monitoring shall be performed while intrusive activities are taking place to detect the presence and relative level of those air contaminants that are inhalation hazards. The purpose of air monitoring is to identify and quantify airborne contaminants in order to determine the level of worker protection needed. Initial screening for identification is often qualitative, but the determination of its concentration (quantification) must await subsequent testing.

All instruments will be calibrated on a daily basis in accordance with the manufacturer's guidelines. Records of all calibrations and real-time measurements will be kept in a bound field logbook or documented via air monitoring and calibration log sheets.

When air monitoring is required, the workers breathing zone(s) will be monitored and the results recorded. Additionally, area samples at the following locations will be taken daily. Record time, location, and results of monitoring and actions taken based on the readings:

- Upwind of work areas to establish background concentrations
- In support zone to check for contamination or migration of emissions

- Along decontamination line to check that decontamination workers are properly protected and on-site workers are not removing protective equipment in a contaminated area
- Downwind of work area to track any contaminants/emissions leaving the site

The data collected throughout the monitoring effort shall be used to determine the appropriate levels of protection. Action levels for upgrading or downgrading of PPE have been established and Table 2 presents the action levels for the on-site Air Monitoring Program.

# **5.1 Exposure Monitoring**

Air monitoring equipment to be used during site activities shall consist of:

- Photoionization Detector (PID)
- Multi Gas Meter
- Colorimetric Detector Tubes

## **5.2** Photoionization Detectors

Exposure to volatile organic compounds (VOCs) shall be monitored with a photoionization detector (PID) with a 10.6 eV lamp (Northern/AVGAS Plume) and 11.7 eV lamp (Southern/ EDC) Plume) in areas other than the loading rack, and with an 11.7 eV lamp in the rack area due to the possibility of encountering EDC in groundwater. The PID has the ability to detect organic vapor concentrations from 1 part per million (ppm) to 2,000 ppm. All PID monitoring shall be conducted in the breathing zone.

## 5.3 Multi-Gas Meter (LEL/O<sub>2</sub>/H2S/CO Meters)

The multi-gas meter is a combination indicator typically including oxygen, carbon monoxide, hydrogen sulfide, and combustible gas, which simultaneously analyzes concentrations of each contaminant in air. When used properly, the portable oxygen indicator will read the percent oxygen in the immediate atmosphere. The normal ambient oxygen concentration is 20.9 percent at sea level. It is necessary to be apprised of such readings as they impact LEL readings and vice versa.

Action levels for each contaminant being monitored can be found in Table 2, which includes parameters, action levels, and actions to be taken.

## 5.4 Colorimetric Detector Tubes

Detector tubes are one of the most frequently used measuring methods for detecting contaminants in the work area. They are used so often because no other simple system is currently able to cover such a wide range of gases and vapors quantitatively. The major limitation of detector tubes is that their accuracy is only within 25 percent of the true concentration of the contaminants sampled. Detector tubes are also known as "colorimetric tubes" or "indicator tubes." Detector tubes are small glass tubes filled with solid absorbents such as silica gel, activated alumina, or inert granules, and impregnated with detecting chemicals through which air is aspirated at a controlled rate. Common types of detector tubes include Draeger, Gastec, RAE, MSA, Sensidyne, etc.

# 5.5 Monitoring Frequency

Monitoring will be conducted continuously during ground intrusive activities or during any activity where airborne hazards (e.g., organic vapors) may be present. The monitoring equipment listed per work activity relates to the initial level of protection. The monitoring frequency may be decreased if the work areas and activities are unchanging, the result of the first hour of monitoring indicates contaminant concentrations are non-detect, and no differing conditions are observed.

Monitoring results will be legibly documented each work day. They will note project name/number, date, time, serial number, date of last calibration, name of person performing calibration, name of person performing monitoring, monitor location within the site, and monitoring results. Daily documentation will be kept with the SS and included in the project file.

# 5.6 Safety and Health Action Levels

An action level is a point at which increased protection or cessation of activities is required due to the concentration of contaminants in the work area. All activities shall be initiated in Modified Level D. The appropriate actions are to be taken at designated action levels. The initial action level(s) for site work can be located in Table 2.

In addition to the action level, an upgrade to Level C is required if:

- Any symptoms occur, as described in Section 3.0
- Requested by an individual performing the task
- Any irritation to eye, nose, throat, or skin occurs

A work stoppage and evacuation (cease and desist) at the specific work area is required if levels in the breathing zone exceed the protection factor of the respirator.

# 6. Site Control

The purpose of site control is to minimize potential contamination of workers and protect the public from hazards found on site. Site control is especially important in emergency situations.

#### **Exclusion Zone (EZ)**

The EZ consists of the specific work area of suspected contamination. All project personnel entering the EZ must use the required PPE, and must have the appropriate training and medical clearance for hazardous waste work. The EZ is the defined area where there is a possible respiratory and/or contact health hazard. Cones, caution tape, or other appropriate means will identify the location of each EZ.

#### **Contamination Reduction Zone (CRZ)**

The CRZ or transition area will be established to perform decontamination of personnel and equipment. All personnel entering or leaving the EZ will pass through this area to prevent any cross-contamination. Tools, equipment, and machinery will be decontaminated in a specific location that will be determined by the SS. The decontamination of all personnel will be performed on Site adjacent to the EZ. Personal protective outer garments and respiratory protection, if worn,

will be removed in the CRZ and prepared for cleaning or disposal. This zone is the only appropriate corridor between the EZ and the support zone (SZ).

#### Support Zone (SZ)

The SZ is a clean area outside of the CRZ located to prevent personnel exposure to hazardous substances. Eating and drinking will be permitted in the support area only after proper decontamination. Smoking will not be allowed on Site. The SZ also provides an area for the storage of equipment and supplies.

The majority of site operations, as well as access to the site, could be controlled from the support zone. The support zone will provide for team communications, emergency response, and sanitary facilities. Appropriate safety and support equipment also will be located in this zone.

The support zone will be located upwind of site operations if possible, and would be used as a potential evacuation point if appropriate. No potentially contaminated personnel or materials are allowed in this zone.

## 6.1 Communication

Each member of the project team will be able to communicate with other team members at all times. Communications will be by way of a telephone or hand signals.

The primary means for external communication are telephones. If telephone lines are not installed at a site, all team members should:

- Know the location of the nearest telephone
- Have the necessary telephone numbers readily available

(Note: The authorized use of cellular phones must be cleared by the client prior to entering site.)

Understanding of the following standard hand signals will be mandatory for all employees, regardless of other means of communication:

- Hand gripping throat Cannot breathe
- Hands on top of head Need assistance
- Thumbs up OK, I'm all right, I understand
- Thumbs down No, negative
- Gripping partner's wrist, or gripping both of your own hands on wrist (if partner is out of reach) Leave area immediately

# 6.2 Buddy System

#### 6.2.1 Responsibilities

A buddy system shall be implemented when conducting intrusive activities on this site. This buddy shall be able to:

- Provide his or her partner with assistance
- Observe his or her partner for signs of chemical exposure or temperature stress

- Periodically check the integrity of his or her partner's protective clothing
- Notify emergency personnel if emergency help is needed

# 6.3 Site Security

Site security is necessary to prevent the exposure of unauthorized, unprotected people to site hazards and to avoid interference with safe working procedures. Security shall be maintained outside of the actual work area(s) so as to prevent unauthorized entry into the work area(s). Members of the general public are to be protected from site hazards.

## 6.4 **Decontamination**

The following are questions/items that may need to be addressed based on site-specific protocols:

- Is formal equipment and/or personal decontamination necessary? If so, what measures will be implemented to manage residual wash waters, sediments, soils, etc.? Disposal measures for used/spent PPE?
- Does a decontamination pad already exist?
- What type(s) of equipment and decontamination cleansers/reagents will be necessary?
- Will wipe sampling and/or other forms of verification be required?
- Is there a decontamination pad/facility present at the site or will a pad need to be constructed? Location(s) of permanent and/or temporary facilities?
- Who is responsible for disposal of any wastes generated by decontamination activities?

The SS is responsible for ensuring that all personnel and pieces of equipment coming off site are properly decontaminated according to the procedures outlined below. Documentation of decontamination must be made in the field log notebook and will become part of the permanent project file.

#### 6.4.1 Personnel and Equipment Decontamination Procedures

All PPE will be disposed of and/or decontaminated at the conclusion of each workday as described below. Decontamination procedures will follow the concept of decontaminating the most contaminated PPE first.

All disposable equipment shall be removed before meal breaks and at the conclusion of the workday, and will be replaced with new equipment prior to commencing work.

Procedures for decontamination must be followed to prevent the spread of contamination and to eliminate the potential for chemical exposure:

- **Personnel:** Decontamination will be initiated prior to exiting the contaminated work area and completed in the Contamination Reduction Zone.
- **Modified Level D**: First, remove outer protective wear. Remove gloves and properly dispose in designated waste container. Wash hands and face.
- Level C: Wash and rinse outer gloves, boots and suit, and remove; remove respirator; dispose of cartridges; wash respirator; and remove inner gloves and dispose. Wash hands and face. Handle all clothing inside out when possible.

• Equipment: All equipment must be decontaminated with Alconox/Liquinox solution or discarded upon exit from the contaminated area in a well-ventilated area. A temporary decontamination pad with a low-volume high-pressure washer will be set up on site during project operations. All decontamination materials will be drummed for subsequent disposal.

# 7. Emergency Procedures

# 7.1 On-Site Emergencies

Emergencies can range from minor to serious conditions. Various procedures for responding to site emergencies are listed in this section. The PM or SS is responsible for contacting local emergency services, if necessary, for specific emergency situations. Various individual site characteristics will determine preliminary action to ensure that these entry procedures are successfully implemented in the event of an emergency. The project team will address necessary facility/client emergency protocols to ensure compatibility between this document and facility/client programs and expectations.

An Emergency Information Sheet containing the hospital location, directions for major injuries and life threatening situations, occupational medical facility directions for all other medical needs, government agency phone numbers, emergency phone numbers, and a map with directions to the local hospital and occupational medical facility is located in Appendix A.

In the event of an emergency:

- Protect personnel in the danger area.
- When working at marketing and transportation facilities, it is critical that workers know the location of the "Emergency Stop" switches and be prepared to activate them in the event of an emergency involving the fuel dispensing equipment if it is safe to do so.
- Upon notification of a release of flammable vapors, fire, or other immediate dangers, the contractor shall immediately shut down all sources of ignition under its control.
- No attempt to start or move vehicles in the area shall be made until conditions are safe for re-entry.
- During a release of toxic gases or chemicals, a flammable vapor release or fire, contractor personnel shall immediately evacuate the danger area to an upwind or cross wind position or another appropriate/safe position and assemble.
- Keep unauthorized people from re-entering the area.
- Call for emergency response personnel as applicable and as identified in the HASP.
- On an operating site, call plant emergency response team or 911, as applicable.
- At all other RM sites, call the appropriate local emergency responder (i.e., fire department, ambulance, police).
- Alternative emergency numbers shall be designated in advance and placed in a centralized location available to all personnel.
- Contractors shall take emergency action to the level of training they possess.

- Contact the Phillips 66 Company [RM Site Manager and Site Business Unit Representative (if applicable) immediately to report the details of the incident.
- Re-entry into the affected area is prohibited until after the emergency is under control and the emergency manager provides clearance to re-enter.
- Contractor must make every effort to preserve evidence that may be needed in the investigation of the incident.

# 7.2 Incident, Injury, and Illness Reporting and Investigation

Any work-related incident, injury, illness, exposure, environment, vehicle accident, property loss, and or security issues must be reported to the SS immediately. Stop Work Authority will be implemented. Provide care for any injured persons and secure the scene.

If there is no SS, the GHD employee on site will call the GHD PM and the GHD Incident Hotline. Personnel on site should maintain the work area as it was at the time of the incident until further directions are given by the GHD PM, HSE Team member, or members of the GHD P66 Leadership Team. No GHD person on site has the authority to call a regulatory agency (environmental or OSHA); this shall be completed by GHD P66 Leadership Team in conjunction with the client. Emergency medical care or support of fire departments is not a restricted call if immediately necessary to protect life and property.

The GHD PM, GHD RSHM, and GHD P66 Leadership Team will coordinate with onsite personnel to gather critical information. The GHD PM is responsible to contract the P66 Program Manager; a positive verbal contact is required. If the P66 Program Manager is not available, the P66 Safety Director shall be contacted with a positive verbal contact. The GHD staff listed above will coordinate the completion and submission of the <u>GHD P66 First Report of Incident and Near Miss</u> form (Appendix A) to the P66 Program Manager on the SAME DATE of the incident for upload to IMPACT by the P66 Program Manager. This same group of GHD staff will manage further communications with the client.

- **Injury/Illness** (e.g., Injuries, Illnesses, Exposure to chemicals, First Aids, Recordables, Lost Workday Cases, Fatalities, Non-Injuries Document only, Non-occupational)
- **Environment** (e.g., Spills, Releases, Odor Complaints, Permit Exceedance)
- Vehicle Accidents (e.g., Cars/Pickups/Trucks, Cranes, Fork Trucks)
- **Property Damage / Loss** (e.g., Fires, Explosions, Loss of Well Control, Damage to Parked Vehicles, Equipment Damage)
- **Security** (e.g. Vandal Damages, Burglaries/Robberies/Thefts, Public Disturbances, Trespasses, Terrorism Threats)

## 7.3 Written Reporting Requirements

If requested, Contractor must provide a timely written report (by email) to the RM Site/Program Manager containing details of any reported incident.

# 7.4 Emergency Equipment/First Aid

Safety equipment will be available for use by site personnel, located within 30 feet of the work area(s), and maintained at the site. The safety equipment may include, but is not limited to, the following:

• First Aid kit (size is dependent upon the number of personnel on site):

Contents: Each first aid kit shall contain, as a minimum (ANSI 308.1-2003):

- 1 Absorbent Compress (32 square inches, no side less than 4 inches)
- 16 Adhesive Bandages (1 inch x 3 inches)
- 1 Adhesive Tape (roll, 3/8 inch x 5 yards)
- 10 Individual Antiseptic (0.5 g)
- 6 Burn Treatments (Antibiotic) (each 1/32 oz.)
- 2 pair Medical Exam Gloves (not to be reused)
- 4 Sterile Pads (3 inches x 3 inches)
- 1 Triangular Bandage

This list shall be placed in each first aid kit for the purposes of inspection and restocking.

- Automated External Defibrillators (AEDs) are optional first aid response equipment for conditions related to heart stoppage. If a unit is on site, designated personnel must be trained in the specific AED unit in addition to First Aid and CPR certification, conduct monthly inspections, and contact listed AED Unit coordinator.
- Emergency eyewash bottles and/or eyewash station lasting 15 minutes.
- Emergency alarms as a means to alert all personnel instantaneously for an emergency.
- Fire extinguisher (at a minimum, a 2A/10BC will be on site).

# 7.5 Emergency Procedures for Contaminated Personnel

Whenever possible, personnel should be decontaminated in the contamination reduction zone before administering first aid, without causing further harm to the patient.

- Skin Contact: Remove contaminated clothing, wash immediately with water, and use soap, if available.
- **Inhalation:** Remove victim from contaminated atmosphere. Remove any respiratory protection equipment. Initiate artificial respiration, if necessary. Transport to the hospital.
- **Ingestion:** Remove from contaminated atmosphere. Do not induce vomiting if victim is unconscious. Never induce vomiting when acids, alkalis, or petroleum products are suspected. Transport to the hospital, if necessary.

Any person transporting an injured/exposed person to a clinic or hospital for treatment should take with them directions to the hospital and a listing of the contaminants of concern to which they may have been exposed.

Any vehicle used to transport contaminated personnel will be cleaned or decontaminated, as necessary.

## 7.6 Site Evacuation

In the event of an emergency situation such as fire, explosion, or significant release of toxic gases, project personnel in the field will be notified through siren from the facility, car horns/honking, and hand and voice signals to evacuate the area. In the event of an emergency, GHD personnel will gather at their primary mustering point for a head count. The SS will determine a primary and secondary muster point to be used as an assembly area in the event of an emergency. The secondary muster point will be located at least 90 degrees from the primary. These locations will be communicated to the work crew(s) during the site-specific training prior to commencement of work activities, weekly thereafter, and prior to the advent of potentially threatening weather. Muster points will be identified in the Emergency Information Sheet and may be indicated on the map.

# 7.7 Spill and Release Contingencies

If a spill has occurred, the first step is personal safety, then controlling the spread of contamination, if possible. GHD personnel will immediately contact site management to inform them of the spill and activate emergency spill procedures.

# 8. Environmental Control Program

This section of the HASP outlines measures to be implemented at the Site to prevent hazards associated with environmental conditions.

# 8.1 Weather Monitoring

The Site Supervisor will be responsible for checking weather forecasts for the next day and week of work to provide advance notification of any severe weather conditions. Severe weather conditions (e.g., heavy rains) may cause unsafe conditions at the site and in some situations work may have to be stopped.

# 8.2 Tornado Safety Policy and Procedures

Tornadoes occur most frequently between April and October from 3:00 to 7:00 p.m. but can occur any time. In most cases, tornadoes move from a west/southwest direction. A typical tornado is a swirling storm of short duration with winds up to 300 miles per hour and a near vacuum at its center. It appears as a rotating funnel-shaped cloud, from gray to black in color, extending towards the ground from the base of a thundercloud.

Tornadoes usually only cover a limited geographical area and give off a roaring sound. A tornado is the most concentrated and destructive potential weather event at the Site. Tornadoes are usually the result of the interaction of a warm, moist air mass with a cool or cold air mass. Secondary effects of tornadoes include flash flooding, electric power outages, transportation-system and communication-system disruption, and fires.

Whenever weather conditions develop that indicate tornadoes are expected, the National Weather Service will issue a tornado watch to alert people in a designated area for a specific time period (normally 6 hours) to remain alert for approaching storms. The tornado watch is upgraded to a tornado warning when a funnel cloud (tornado) is actually sighted or indicated by weather radar.

When a tornado is approaching, Site personnel will only have a short time to react. Therefore, Site personnel must be prepared to react during periods of severe weather. Memorize the following tornado danger signs:

- i) Approaching clouds of debris can mark the location of a tornado even if a funnel cloud is not visible
- ii) Before a tornado hits, the wind may die down and the air can become very still/calm
- iii) It is not uncommon to see clear, sunlit skies behind a tornado as they usually occur at/near the trailing edge of thunderstorms

#### **Tornado Evacuation Procedures**

GHD and contractor personnel shall monitor weather related information provided by National Weather Service. If the National Weather Service issues a tornado watch and/or warning occurs,

The tornado shelter most accessible to GHD personnel is located at the facility building

Directions to the shelter are to be communicated to Site personnel during initial Site safety orientation and throughout the tornado season during subsequent safety meetings.

If unable to reach the designated shelter, refer to the emergency procedures listed in the next section for personnel working in remote areas. The best protection in a tornado is usually an underground area. If an underground area is not available, consider small interior rooms on the lowest floor without windows, hallways on the lowest floor away from doors and windows, rooms constructed with reinforced concrete/brick/block with a heavy concrete floor and roof, and protected areas away from doors and windows.

## 8.3 Rain and Snow

Excessive amounts of precipitation may cause potential safety hazards for work tasks. The hazards that would be most commonly associated are slipping, tripping, or falling due to slippery surfaces.

Severe weather conditions will result in work stoppage and the implementation of further emergency measures.

## 8.4 **Temperature**

Site activities are expected to be conducted year round. Temperature extremes may be experienced which require measures to be implemented to prevent health and safety hazards from occurring. Potential hazards arising from temperature extremes are heat stress and cold exposure.

#### 8.5 Wind

High winds may be encountered at the Site and these can cause hazards that may affect Site personnel health and safety. Preventative measures that will be implemented if necessary are as follows:

i) Restrict Site activities

- ii) Batten down light equipment or building materials
- iii) Partially enclose work areas
- iv) Reduce or stop work activities

# 8.6 Lightning and Thunder

Every thunderstorm produces lightning. Lightning is an electrical discharge caused when static electricity builds up between thunderclouds, or thunderclouds and the ground. Lightning strokes carry up to 100 million volts of electricity and leap from cloud to cloud, or cloud to ground and vice versa. Lightning tends to strike higher ground and prominent objects, especially good conductors of electricity such as metal.

Thunder is the noise caused by the explosive expansion of air due to the heat generated by a lightning discharge. Thunder may have a sharp cracking sound when lightning is close by, compared with the rumbling noise produced by more distant strokes.

Because light travels at a faster speed than sound, you can see a lightning bolt before the sound of thunder reaches you.

To judge how close lightning is, count the seconds between the flash and the thunder clap. Each second represents about 328 yards/300 meters. If you can count less than 30 seconds between the lightning strike and the thunder, the storm is less than 6.2 miles/10 km away and there is an 80 percent chance the next strike will happen within that 6.2 miles/10 kilometers.

Lightning may strike several miles/kilometers away from the parent cloud and therefore precautions should be taken even if the thunderstorm is not directly overhead.

#### If you hear thunder or see lightning, stop work immediately and seek safe shelter.

Remain sheltered for 30 minutes after hearing the last thunder before returning to work.

## 8.7 Outdoor Precautions during Severe Weather

- Keep a safe distance from tall objects, such as trees, hilltops, and telephone poles.
- Avoid projecting above the surrounding landscape. Seek shelter in low-lying areas such as valleys, ditches, and depressions, but also be aware of flooding.
- Stay away from water. Don't go boating or swimming if a storm threatens. Move to land as quickly as possible if you are on the water. Lightning can strike the water and travel some distance from its point of contact. Don't stand in puddles even if you are wearing rubber boots.
- Stay away from objects that conduct electricity, such as tractors, golf carts, golf clubs, metal fences, motorcycles, lawnmowers, and bicycles.
- Avoid being the highest point in an open area. Holding a conductive tool, swinging a golf club, or holding an umbrella or fishing rod can make you the tallest object and a target for lightning. Take off shoes with metal cleats.
- You are safe inside a car during lightning, but don't park near or under trees or other tall objects, which may topple over during a storm. Be aware of downed power lines, which may be touching your car.

- In a forest, seek shelter in a low-lying area under a thick growth of small trees or bushes.
- Be alert for flash floods, which are sometimes caused by heavy rainfall, if seeking shelter in a ditch or low-lying area.
- If caught in a level field far from shelter and you feel your hair stand on end, lightning may be about to hit you. Kneel on the ground immediately, with feet together, place your hands on your knees and bend forward. Don't lie flat.
- If you are in a group in the open, spread out, keeping people several yards/meters apart.

## 8.8 Indoor Precautions during Severe Weather

- Before the storm hits, disconnect electrical appliances including radios and television sets. Do not touch them during the storm.
- Don't go outside unless absolutely necessary.
- Stay away from doors, windows, fireplaces, and anything that will conduct electricity, such as radiators, stoves, sinks, and metal pipes. Keep as many walls as possible between you and the outside.
- Don't handle electrical equipment or telephones. Use battery operated appliances only.

# 9. Medical Surveillance

In accordance with the requirements detailed in 29 CFR 1926.65 and 29 CFR 1910.134, all Site personnel who will come in contact with potentially contaminated materials will have received medical surveillance by a licensed physician or physician's group.

Medical records for all on-Site personnel will be maintained by their respective employers. The medical records will detail the tests taken and will include a copy of the consulting physician's statement regarding the tests and the employee's suitability for work, as per the employer's medical surveillance program which is to be in accordance with 29 CFR 1926.65.

The medical records will be available to the employee or his designated representative upon written request, as outlined in 29 CFR 1910.1020.

Each employer will provide certifications to their on-Site SHO that their personnel involved in Site activities will have all necessary medical examinations prior to commencing work, which requires respiratory protection or potential exposure to hazardous materials. Personnel not obtaining medical certification will not perform work within contaminated areas.

Interim medical surveillance will be completed if an individual exhibits poor health or high stress responses due to any Site activity or when incidental exposure to elevated concentrations of contaminants occurs.

## 9.1 Additional Medical Surveillance

Benzene and lead are inhibitors, and personnel involved in the work activities with exposure to these contaminants will undergo additional medical surveillance testing for benzene and lead. This will consist of a pre-task entrance/baseline evaluation and an exit evaluation upon completion of task activities. This may also include periodic testing due to the duration of the project. The SS and

Site HSE Officer in conjunction with the PM will be responsible for arranging this additional medical monitoring.

## 9.2 Substance Abuse Management

All staff on site for GHD and subcontractors must be in compliance with the P66 Substance Abuse Policy for the specific location. Most locations require that proof of drug and alcohol testing within the past 12 months must be available upon request by GHD or the client (copies do not have to be on site). Some refineries have more stringent time frames. Confirmation of GHD's personnel compliance can be checked with the Corporate HSE Manager.

# 10. Recordkeeping

The SS shall establish and maintain records of all necessary and prudent monitoring activities as described below:

- Name and job classification of the employees involved on specific tasks
- Air monitoring/sampling results and instrument calibration logs
- Records of training acknowledgment forms (site-specific training, toolbox meetings, etc.)
- Documentation of site inspections, results of inspections, and corrective actions implemented
- Emergency reports describing any incidents or accidents

# **Tables**

### Table 1.0

### **Properties of Potential Site Contaminants**

	Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Benzene CAS-71-43-2	Benzene Benzol CAS-71-43-2	< 0.75 mg/L	TLV: 0.5 ppm [skin] PEL: 1 ppm STEL: 2,5 ppm IDLH: 500 ppm	Inhalation Absorption (skin) Ingestion	ACUTE: Irritation to eyes, skin, respiratory tract; dizziness; headache; nausea; staggered gait; fatigue, abdominal pain. CHRONIC: Defatting of the skin, may have effects on bone marrow and immune system, decrease in blood cells. Carcinogenic to humans.	(FP) 12°F (VP) 75 mm (IP) 9.24 eV (UEL) 7.8% (LEL) 1.2%	Colorless to light-yellow liquid with an aromatic odor. Solid below 42°F.
Ethylbenzene CAS-100-41-4	Ethylbenzene Ethylbenzol EB CAS-100-41-4	< 75 mg/L	TLV: 20 ppm PEL: 100 ppm STEL: NE IDLH: 800 ppm	Inhalation Ingestion Skin contact Eye contact	ACUTE: Causes irritation of the eyes, skin, mucous membranes, and respiratory tract. Effects on CNS. CHRONIC: Defatting of the skin, narcosis, and coma.	(FP) 55°F (VP) 7 mm (IP) 8.76 eV (UEL) 6.7% (LEL) 0.8%	Colorless liquid with an aromatic odor.
Hydrogen Sulfide CAS-7783-06-4	Hydrogen Sulfide Sulfur Hydride CAS-7783-06-4	Potential at Facility	TLV: 1 ppm PEL: 20 ppm (C) STEL: 5 ppm IDLH: 100 ppm	Inhalation Skin contact Eye contact	ACUTE: Irritation of eyes and respiratory tract. May effect CNS. Unconsciousness, death. CHRONIC: NA	(FP) NA (gas) (VP) 17.6 atm (IP) 10.46 eV (UEL) 44.0% (LEL) 4.0%	Colorless gas with a strong odor of rotten eggs. (Note: sense of smell becomes rapidly fatigued).
Toluene CAS-108-88-3	Toluene Methylbenzene Toluol CAS-108-88-3	< 1.5 mg/L	TLV: 20 ppm PEL: 200 ppm STEL: NE IDLH: 500 ppm	Inhalation Ingestion Absorption	ACUTE: Irritation to eyes and respiratory tract. Ingestion may cause chemical pneumonitis. Affects CNS. Unconsciousness and cardiac dysrhythmia at high level exposures. CHRONIC: Defatting of the skin. Affects CNS. Enhanced hearing damage.	(FP) 40°F (VP) 21 mm (IP) 8.82 eV (UEL) 7.1% (LEL) 1.1%	Colorless liquid with a sweet, pungent, benzene-like odor.
Xylene (o;m;p isomers) CAS-106-42-3	Xylene (o;m;p isomers) CAS-106-42-3	< 9.5 mg/L	TLV: 100 ppm PEL: 100 ppm STEL: 150 ppm IDLH: 900 ppm	Inhalation Absorption Ingestion	ACUTE: Irritation to eyes and respiratory tract. Ingestion may cause chemical pneumonitis. Affects CNS. CHRONIC: Defatting of the skin, lung damage resulting in chronic bronchitis. Affects CNS and blood.	(FP) 90/82/81°F (IP) 7/9/9 mm (IP) 8.56eV (UEL) 6.7% (LEL) 0.9%	Colorless liquid with an aromatic odor. (p⊣somer solid <56°F).

#### Notes:

- FP FP Flash Point
- IDLH IDLH Immediately Dangerous to Life ord Health
- IP IP Ionization Potential
- NE NE Not Established (Information Not Available)
- NA NA Not Applicable
- CNS CNS Central Nervous System
- PNS PNS Peripheral Nervous System ppm pprn - parts per million
- mg/m3 mg/m3 miligrams per cubic meter

- PEL PEL OSHA Permissible Exposure Limit
- STEL STEL Short Term Exposure Limit
- TLV TLV ACGIH Threshold Limit Value
- VP VP Vapor Pressure
- C C Ceiling Exposure Limit
- [skin] [skin] potential for dermal absorption
- mm mm milimeters Hg (mercury)
- eV eV-electrovolts

### Table 1.0

### **Properties of Potential Site Contaminants**

	Chemical Name (Synonyms)	Concentration at Site	Exposure Limits	Routes Of Entry	Symptoms/Health Effects	Chemical Properties	Physical Characteristics
Diesel Fuel #2 CAS-68476-34-6	Diesel Fuel #2 Heating Fuel #2 CAS-68476-34-6	Potential Free Product	TLV: 100 mg/m3 (IFV) PEL: NE STEL: NE IDLH:	Inhalation Ingestion Skin contact Eye contact	ACUTE: Eye irritation and burning, euphoria, dizziness, headache, discoordination, ringing in ears, convulsions, skin irritation and burning sensation, vomiting CHRONIC: Coma, respiratory arrest, defatting of the skin, central nervous system depression, possible kidney and liver damage.	(FP) > 104 F (VP) 0.40 mm (IP) NA (UEL) 10.0% (LEL) 0.3%	Colorless to straw or red oil liquid with characteristics kerosene-like odor. NOTE: Refer to MSDS for additional information.
Gasoline CAS-86290-81-5 8006-61-9	Gasoline Motor fuel Petrol Natural gasoline CAS-86290-81-5 8006-61-9	Potential Free Product	TLV: 300 ppm PEL: NE STEL: 500 ppm IDLH: NE	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Irritation to eyes, skin and mucous membranes. Dermatitis, headache and fatigue. Blurred vision and slurred speech. CHRONIC: Possible liver and kidney damage. Carcinogen.	(FP) -45 °F (VP) 38-300 mm (IP) NE (UEL) 7.6% (LEL) 1.4%	Clear mobile liquid with a characteristic odor. It is recommended that atmospheric concentrations should be limited by the aromatic hydrocarbon content.
1,2-Dichloroethane CAS-107-06-2	1,2 Dichloroethane Ethylene dichloride Glycol dichloride CAS-107-06-2	< 0.5 mg/L	TLV: 10 ppm PEL: 50 ppm, 200 ppm C STEL: NE IDLH: 50 ppm	Inhalation Absorption Ingestion	ACUTE: Inhalation causes lung edema. May affect CNS, kidneys, and liver. Vapors cause irritation to eyes, skin and respiratory tract. CHRONIC: Defatting of the skin. May cause kidney and liver damage.	(FP) 56°F (VP) 64 mm (IP) 11.05 eV (UEL) 16.0% (LEL) 6.2%	Colorless, viscous liquid with a pleasant chloroform-like odor. Turns dark on exposure to air, moisture and light.
Naphthalene CAS-91-20-3	Naphthalene Naphthalin Coal tar White tar CAS-91-20-3	<0.5 mg/L	TLV: 10 ppm PEL: 10 ppm STEL: 15 ppm IDLH: 250 ppm	Inhalation Ingestion Skin contact Absorption Eye contact	ACUTE: Levels above 10 ppm may cause: Inhalation - Headache, nausea, excessive sweating and vomiting: Skin - May cause irritation and if hypersensitive to naphthalene then severe irritation may occur; Eyes - Irritation. Direct contact may cause blurring vision and damage to the cornea; Ingestion - Nausea, vomiting, abdominal pain, bladder irritation, and brown or black coloration of urine. CHRONIC: Clouding of the eyes. Chronic skin problems in cases of hypersensitivity. Liver and kidney damage.	(FP) 174°F (VP) 0.08 mm (IP) 8.12 eV (UEL) 5.9% (LEL) 0.9%	Colorless to brown solid with an odor of mothballs. Sometimes found as a crystalline white solid. Shipped as a motten solid.

Notes:

- FP FP - Flash Point
- IDLH IDLH - Immediately Dangerous to Life ord Health
- IP IP - Ionization Potential
- NE NE - Not Established (Information Not Available)
- NA NA - Not Applicable
- CNS CNS - Central Nervous System
- PNS PNS - Peripheral Nervous System
- ppm parts per million ppm mg/m3 mg/m3 - miligrams per cubic meter

- PEL PEL OSHA Permissible Exposure Limit
- STEL STEL Short Term Exposure Limit
- TLV TLV ACGIH Threshold Limit Value
- VP VP Vapor Pressure
- C C Ceiling Exposure Limit
- [skin] [skin] potential for dermal absorption mm mm - milimeters Hg (mercury)
- eV eV-electrovolts

NA-PRO-HSE-03a 075016 (11)



### Table 2

### On-Site Air Monitoring Program Action Levels Health and Safety Plan

Monitoring Device	Action Level	Action					
Photoionization Detector (PID)							
10.6 eV lamp - North/AVGAS Plu	n <10.0 ppm or Background	Continue Field Activities and Air Monitoring					
11.7 eV lamp - South/EDC Plume	<mark>∋</mark> <u>≥</u> 10.0ppm	Shut down activities. Contact SHO, PM, & RSHM to determine path forward.					
Dust/Particulate - (Impacted	No Visible Dust	Continue Field Activities					
Soils/Sludges/Sediments)	Visible Dust	Shut down activities. Employ additional engineering controls.					
Hydrogen Sulfide	>5 ppm	Shut down activities. Notify SHO, PM, & RSHM. Implement additional engineering controls					
Carbon Monoxide	>35 ppm	Shut down activities. Notify SHO, PM, & RSHM. Implement additional engineering controls					
Combustible Gas Indicator	>10 Percent LEL	Cease operations and move to a safe place. Notify SHO, PM, & RSHM. Do not continue working until conditions are constantly below 10 percent LEL					
Oxygen Meter	<19.5 Percent or >23.5 Percent When oxygen levels are outside this range, percent LEL readings are not reliable	Cease operations and move to a safe place. Notify SHO, PM, & RSHM. Do not continue working until oxygen levels are between 19.5 and 23.5 percent					

If GHD is unable to identify/quantify the contaminants, supplied air will be required when the PID reading is greater than background, as the contaminant will be unknown and NIOSH, OSHA, and the manufacturer's use requirements for Level C (air purifying respirators) will not be met. If PID readings subside, workers can downgrade as necessary. GHD will upgrade to supplied air and attempt to obtain additional information for possible chemicals present in GHD's work area. The Owner will need to provide/obtain additional information as to the identity of the contaminant(s) in order to permit the use of Modified D and/or Level C.

Notes:

SHOSafety and Health OfficerLELLower Explosive LimitPPEPersonnel Protective Equipmentppmparts per million

# Appendices

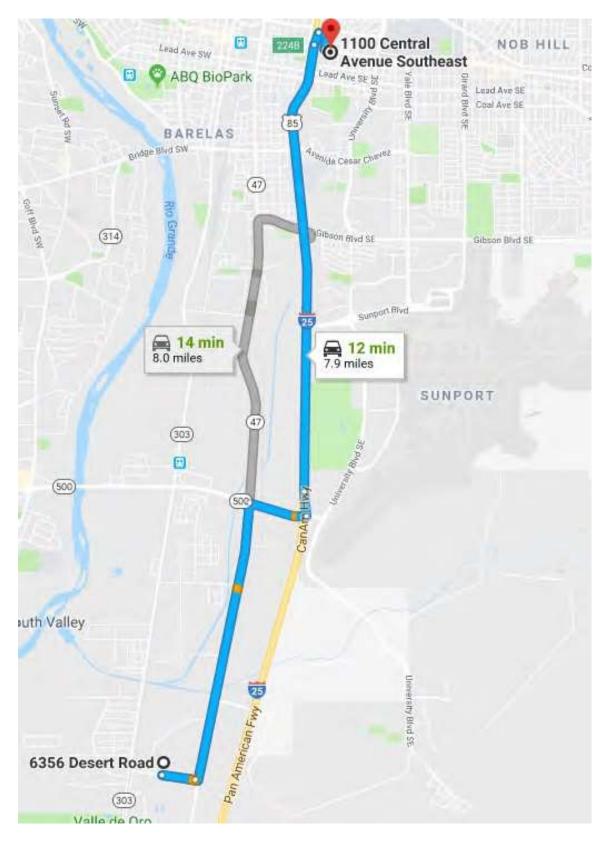
# Appendix A Forms

## Emergency Contact List and Medical Facility Route Maps

Contact .ocal Police Nbuquerque Police Department	Phone Number 911- Emergency	Hospital/Occupational Clinic Directions
Albuquerque Police Department		
ire	505-242-2677 (Direct to Dispatcher)	<ul><li>Hospital Directions:</li><li>See Attached</li></ul>
	911- Emergency 505-242-2677 (Direct to Dispatcher)	
Ambulance	911- Emergency 505-242-2677 (Direct to Dispatcher)	
.ocal Hospital: Presbyterian Hospital	505-841-1234	
100 Central Avenue Southeast Albuquerque, NM 87106		
Dccupational Clinic: Concentra	505-842-5151	<ul><li>Occupational Clinic Directions:</li><li>See Attached</li></ul>
3101 Menaul Blvd NE Suite B Albuquerque, NM 87107		
National Poison Center	800-222-1222	
GHD Project Manager: Chrissi Ruby Work: Cell:	720-974-0969 720-737-7217	<ul> <li>GHD – Incident Reporting Hotline</li> <li>Please call (866) 529-4886 and provide:</li> <li>Name and location of caller</li> <li>Description of incident <ul> <li>Name of any injured persons</li> <li>Description of injuries</li> <li>Phone number for return call</li> </ul> </li> <li>Phillips 66 – Call P66 Program Manager. Mus make verbal contact. If not available, contact P66 RM Safety Director</li> <li>Management/Emergency Notification: <ul> <li>Primary:</li> <li>P66 Safety Director: Nick Hutchins</li> </ul> </li> </ul>
GHD Site Supervisor: <b>Christine Mathews</b> Work: Cell:	505-884-0672 505-269-0088	
GHD RSHM: <b>Matt Downing</b> Work: Cell:	720-974-0949 720-445-2055	
/lain P66 RM Contact/Program Manager: Becky Hesslen		
Work: Cell:	918-977-4511 918-914-3846	

P66 RM Field Manager Work: Cell:		
P66 RM Safety Director: <b>Jen Wiliams</b> Work: Cell	918-977-4511 918-914-3846	
P66 Site Contact: Royce Conger Work: Cell:	505-877-0900 505-400-2849	
Person to verify hospital route Christine Mathews	Signature	

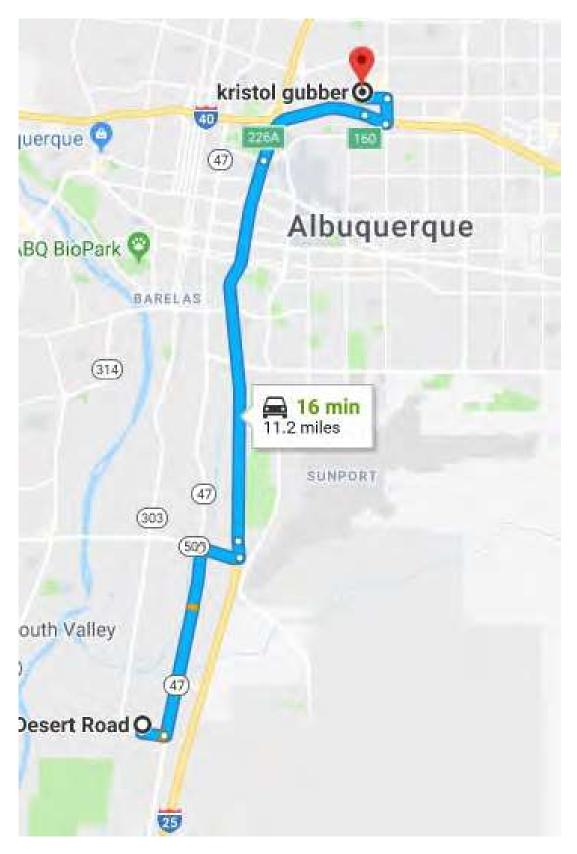
# **Hospital Map**



	min (7.9 miles) 🛛 🕄 👼						
Fast	est route, the usual traffic						
20.00	6 Desert Rd guergue: NM 87105						
t	Head east on Desert Rd						
	0.3 ml						
٦	Turn left onto Broadway Blvd SE/Desert Rd Ocntinue to follow Broadway Blvd SE						
	2.5 ml						
r*	Turn right onto Rio Bravo Blvd SE						
	0.6 mi						
*	Use the left 2 lanes to turn left onto the Interstate 25 N ramp						
	in 2 m						
*	Merge onto I-25 N						
	39 mi						
r	Take exit 224B toward Dr. Martin Luthur King Jr Ave						
	0.1 ml						
r	Turn right onto Tijeras Ave NE						
	367 ft						
۴	Turn right at the 1st cross street onto Mulberry St NE						
	0.1 mil						
4	Turn left at the 2nd cross street onto Central Ave SE/Rte 66						
	Destination will be on the right						
	335 ft						

Albuquerque, NM 87106

# **Clinic Map**



# 16 min (11.2 miles)



via I-25 N Fastest route, the usual traffic

# 6356 Desert Rd

Albuquerque, NM 87105

Get on I-25 N in Albuquerque from Broadway Blvd SE

7 min (3.5 mi)

Continue on I-25 N to Carlisle Blvd NE. Take exit 160 from I-40 E

7 min (6.9 mi)

Continue on Carlisle Blvd NE. Drive to Menaul Blvd NE

3 min (0.7 mi) -

# kristol gubber

3101 Menaul Blvd NE, Albuquerque, NM 87107

## HASP Acknowledgment Sheet

This is to certify that I have received a pre-entry briefing regarding this HASP (GHD P66 Albuquerque Products Terminal Site), and I understand its contents. My failure to follow and comply with the requirements contained in this plan may result in disciplinary action and/or termination.

Print Name	Signature	Date



# **HASP** Acknowledgment Sheet

Project Number: \_\_\_\_\_

This is to certify that I have received a pre-entry briefing regarding this HASP, and I understand its contents. My failure to follow and comply with the requirements contained in this plan may result in disciplinary action and/or termination.

Signature	Date



# Phillips 66 Remediation Management Safety Video Acknowledgement Form

Project Name:

Project Number:

This is to certify that I have reviewed the Phillips 66 Remediation Management 2012 Remediation Contractor Basic Safety video and I recognize the importance of this message and understand its contents. My failure to follow and comply with these requirements contained in this video may result in disciplinary action and/or termination.

Print Name	Signature	Company	Date

### My Personal Commitment to SAFETY



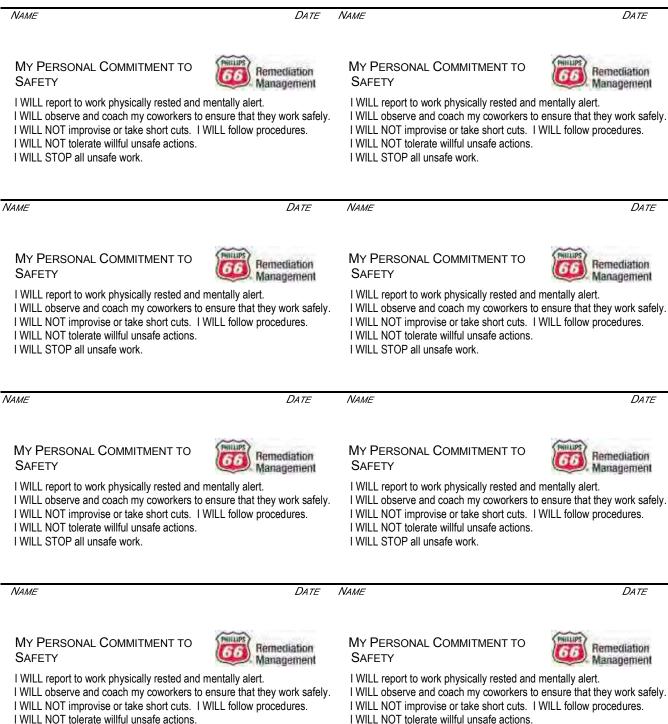
I WILL report to work physically rested and mentally alert.

- I WILL observe and coach my coworkers to ensure that they work safely. I WILL NOT improvise or take short cuts. I WILL follow procedures.
- I WILL NOT Improvise or take short cuts. I will follow procedures.
- I WILL NOT tolerate willful unsafe actions.
- I WILL STOP all unsafe work.

## MY PERSONAL COMMITMENT TO SAFETY



- I WILL report to work physically rested and mentally alert.
- I WILL observe and coach my coworkers to ensure that they work safely.
- I WILL NOT improvise or take short cuts. I WILL follow procedures.
- I WILL NOT tolerate willful unsafe actions.
- I WILL STOP all unsafe work.



I WILL STOP all unsafe work.

I WILL STOP all unsafe work.

AT PHILLIPS 66, WE TAKE THE TIME TO WORK SAFELY, EVERY JOB, EVERY DAY.



REPORT ALL WORK-RELATED INJURIES OR ILLNESSES IMMEDIATELY AT PHILLIPS 66, WE TAKE THE TIME TO WORK SAFELY, EVERY JOB, EVERY DAY.



REPORT ALL WORK-RELATED INJURIES OR ILLNESSES IMMEDIATELY

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AT PHILLIPS 66, WE TAKE THE TIME TO WORK SAFELY, EVERY JOB, EVERY DAY.



REPORT ALL WORK-RELATED INJURIES OR ILLNESSES IMMEDIATELY



# **Tailgate**Safety Meeting FormLarge Group Format - Single Day

Date:		Time:		Project No.:	
Presenter	:		Project Name:		

## Safety topics/items discussed:

## Emergency preparedness:

First Aid Provider(s):	Muster Point:
	Method of
	Communication:
AED Responder:	Fire Extinguisher
	Location:
First Aid Kit	Eye Wash
Location:	Location:

## Site personnel in attendance:

Print Name:	Signature:	Company:



# **Tailgate** Safety Meeting Form Small Group Format - Multiple Days

Date:			Time:		Project No.:	
Present	er:			Project Name:		

## Safety topics/items discussed:

## Emergency preparedness:

First Aid Provider(s):	Muster Point:	
	Method of Communication:	
AED Responder:	Fire Extinguisher Location:	
First Aid Kit Location:	Eye Wash Location:	

Print Name	Signature	Company		

Date:			Time:		Project No.:	
Present	er:			Project Name:		

## Safety topics/items discussed:

### Emergency preparedness:

First Aid Provider(s):	Muster Point:	
	Emergency Communication:	
AED Responder:	Fire Extinguisher Location:	
First Aid Kit Location:	Eye Wash Location:	

Print Name	Signature	Company		



**Remediation Management** 

## Tailgate Meeting Expectations

	First work day*	Daily	Торіс	Summary
1	X	X	Introduction	Gather group. General comments about scope and purpose of the day's activities. Review each person's obligation to Stop Unsafe work. If the scope of work involves high risk work such as drilling, excavation, trenching, crane lifts, etc., Lessons Learned from previous incidents and "Stop Work" events should be reviewed in open discussion.
	X			Identify any workers in the Short Service Employee Program. Identify any knowledge gaps that may exist due to inexperience. Identify any workers who may need language interpretation.
2	Х	Х	Location of HASP	Review location of HASP/bridging document if needed for reference. Get verbal confirmation that everyone has previously reviewed and understands the HASP.
	X			HASP must contain the location of the nearest occupational health clinic and hospital. May need to review route if workers are unfamiliar with the area.
3	X	X	PPE	Confirm that all workers have basic required PPE for job site as specified in the HASP.
4	X	x	Site-specific emergency procedures	Confirm knowledge of types of warning alarms and emergency procedures at the job site.Confirm location of emergency equipment (such as first aid kit or fire extinguisher).Confirm location of Material Safety Data Sheets.Confirm knowledge of evacuation plans.Confirm wind direction and assembly area in case of
	X	X	Incident reporting	emergency. Review requirement to STOP WORK and report all incidents
6	X	X	Work zone delineation	<ul> <li>and near misses to site supervision.</li> <li>Define the boundaries of the work/exclusion zone to protect workers from vehicle or pedestrian traffic.</li> </ul>
7	X	X	Communications check	Check operability of cell phone (where permitted), radio, etc. Cell phones should NOT be used in the work zone, but can be used outside of the work zone, or in case of emergency. Drivers shall not use Portable Electronic Devices or Cellular Phones, even if the device is equipped with a "hands-free" option.
8	Х		Cutting tools	No Fixed Open-Bladed Knife may be used on an RM worksite.

\*Cover these items on the first work day of the week, and when new workers join the work crews.

Job Hazards Analyses (JHAs) discussions are not part of the morning tailgate meetings. JHAs are to be discussed before the beginning of each task. Multiple JHAs may be performed during a workday.



# **First** Report of Incident & Near Miss Form For Phillips 66 Company

Section 1: General Information									
Incident Significant Near Miss Near Miss	Environmental			operty Damag			☐ Vehicle ☐ Quality		] Security
Primary Consultant.	City/State of Consultant's Field Office			Sub-Contrac	tor Name:	Incident State).	dent Location (City, te).		ite ID (4 digits):
Site Type         Marketing       Refining         Transportation         Transportation			n - Marine	☐ Transp ☐Corpora	ortation – Pipelir ate 🛛 🗌 Lo	ne ower 48	☐ Transportat ☐NGL		Terminals □ Other
RM Site Manager:			Location	– Within Facil	ity Boundaries		Offsite – Within F	acility	Boundaries
GHD Employee No.	Last N	lame		First Name			Middle Name/Initial		
Position/Title				Supervisor			GHD Home office lo	ocatior	1
Short Description of Inciden	t								
		☐ Cyclonic ☐ Mist ☐ Windy		usty overcast	☐ Fog ☐ Partly Cloud	ly □F		cy Sleet	
Lighting Conditions				Date and Hour	r of Incident		Date and Hour	r Repo	orted to Employer
Dawn Day Indoor Nigh		Dusk		MM/DD/YYYY		a.ı p.ı		•	a.m. p.m.
Witness Name(s):		Employee/Con	tractor/Othe	er	Phone:		Date and Hour	r Last V	Worked
							MM/DD/YYYY	,	a.m. p.m.
Equipment Involved         Aerial Lifts       Alarms & Interlocks         Cooling Equipment       Distribution & Injection         Fire Protection & Detection       Heat Exchangers         Heat Exchangers       Heaters         Marine Systems       Mixing & Blending Equipment         Oil Treating Equipment       Process Control Equipment         Scales       Sensors, Transmitters, Indicate         Solids/Powders Transfer Equipment       Well Systems - Subsurface         Environmental Release Info.       Product Material			□ E □ F □ Ir □ P nt □ P dicators □ T □ V	compressor, Er jectors lares lobile Equipme ackaging Equi umps anks /ell Systems -	pment Rail Transpo Sewers Water Treat	n oment ortation		parato Is Rack g & Co stems/ 'ent Sy	rs introl Equipment /Piping Components /stems t
Released	•							Unit	
Released									
Recovered									



Section 2: Full Description of the	e Incident	
Section 3: Immediate Actions Ta	ken:	
Accountability		
Initial Report Date	Initial Report Prepared by: (please print)	Company
Month Day Year		Company





# Supplement to First Report of Incident & Near Miss Form For Phillips 66 Company

\*This document is to be used as a supplement for GHD Near Miss and Incident Reporting Requirements, however this form is not required for the reporting of unsafe conditions, if the condition is corrected immediately.

Emp	loyee No.	Last Name		First Nam	e Pr		Project Nar	Project Name / Number & RM ID		
Date of	of Hire	Position/Title		Superviso	r		Project Mar	nager		
Cond repor	t the Near Lo	Root Cause Analys ss to Accident Hot	is Investigation. In Line so it can be de	termined if a D	etailed Tap Root	t Cause Analys	is is necess	ary		
Subm Invest Was t No 5-Why	HASP prepared? ( ) Yes ( ) No       Did the safety plan identify and provide safety procedures for the specific tasks being performed when the Near         Submit a PDF of HASP to       Loss occurred? ( ) Yes ( ) No If no, why not? (Explain)         Investigation Team.       Did the employee utilize the STAR process before initiating the task? ( ) Yes ( ) No         Was the HASP on-site?( ) Yes ( )       If no, why not? (Explain)         No       S-Why Root Cause Analysis:         1. Why did "above" happen?									
1. Wh	y did "above	" happen?								
2. Wh	y did "1" hap	pen?								
3. Wh	y did "2" hap	pen?								
4 \A/b	y did "3" hap	2007								
4. 991	yulu ə nap	penr								
5. Wh	y did "4" hap	pen?								
6. Wh	y did "5" hap	ppen?								
	onal informa ocument.	tion: Attach photo	os, witness statemer	it(s), aπected e	mpioyee statem	ent, accident d	agrams, as	applicable, to the end	OT	
	untability									
Invest	igation Team		Company			Positio	on/Title			
Final I	Report Date		Final Report Prepar	ed by: (please p	orint)	Final F	Report Prepa	red by: (signature)		
		С	orrective Action				Validation	& Verification		
CF	Corrective (Must mate	Actions h Causative Factor)	Responsible Party	Due Date	Date Completed	Verified By/ Validated By Verified By:	Date	Details		
						Validated By	<u>.</u>			
						Verified By:				
						Validated By	r:			
						Verified By:				
						Validated By	<u>,</u>	+		

## **GHD 10 CAUSATIVE FACTORS (CF)**

	Personal Factors	Company Factors			External Factors		
1	Insufficient training for task	5	Incomplete or no procedures	10	Exposure to conditions		
2	Hurrying to complete the task	6	Procedures not known or enforced				
3	Easier if proper process not followed	7	Improper PPE				
4	Took shortcuts without prior incident	8	Improper tools				
		9	Improper workplace layout				



# **Underground Utilities Checklist**

### Pre-Drilling/Excavation Checklist and Utility Clearance Log

Project number:	Project name:
Date:	Project location:
Public utility locator:	Public utility locator phone number:
Date of public utility locator request:	Public locator call reference number:
Private utility locator (If applicable):	Private utility locator phone number:

Utilities (indicate that location/utility presence was checked)												
Borehole/ Excavation location	Date (mm/dd/yyyy)	Telephone	Water	Storm sewer	Sanitary sewer	Process sewer	Gas	Electrical	Cable	Overhead utilities	Other	Comments/Warnings
							Ì		Ì	Ì		
							1		Ì			
Utility owner												

**Instructions:** This checklist is to be completed by GHD personnel prior to initiation of field activities as a safety measure, to ensure that all underground utility lines, other underground structures, and above-ground power lines are clearly marked in the area selected for boring or excavation.

Notes:			
Client:	Client representative:		Phone number:
Client or property owner acknowledgement of utility clearance:			(Client, property owner, or authorized agent signature)
Subcontractor acknowledgement of utility clearance:			(Subcontractor or subcontractor representative signature)
GHD field representative name:		Signature:	
GHD project manager's review/confirmation of locate completion:			

In the event that client or property owner acknowledgement cannot be obtained, all boreholes shall be hydro vacuumed and the costs passed on to the client. Attach any clearance documentation from utility owner/operator to this document.

# **Underground Utilities Checklist for GHD Personnel**

## Pre-Drilling/Excavation Checklist and Utility Clearance Log

Drilling or excavation work may not proceed if any of the questions answered below are answered "No." Implement stop work authority and contact the GHD project manager to discuss and resolve any concerns or issues. Document the reason for a "No" answer in the comments section below.

Yes	No	N/A	Pre-Mobilization					
			1. Has a utility locator request been completed within the last 30 days (verify time limit with state or provincial law)? If no, stop work and comment below.					
			2. Is a scaled site plan, map or drawing showing the proposed borehole locations attached to this form?					
			3. Does each borehole and excavation location allow for clear entry and exit, adequate workspace, and a clear path for raising the mast (or boom) and operating the drill rig and all support equipment? Ensure that the minimum OSHA/state/provincial utility clearance requirements between the mast or boom and the power line(s) are met. For instance, OSHA requires a minimum approach distance of 10 feet for systems below 50 kV and an increase of 4" for every 10 kV over 50 kV. Confirm if additional permits are required if the boom or mast will be working 5 meters (15 feet) or less from the electrical lines.					
			4. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface or above-ground utilities shown on client's building plans? Check here i if plans not provided by client (therefore not applicable to this job.					
			5. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface or above-ground utilities shown on public right-of-way street improvement or other public property plan or site map?					
			6. Has the site representative, familiar with the site, indicated no knowledge of any subsurface or above-ground utilities within 3 metres (10 feet) of the proposed borehole and excavation locations? (Review locations with site representative)					
			7. Are all of the proposed borehole and excavation locations at least 1.0 meters (3 feet) from any subsurface utilities identified during a geophysical survey? Check here i if no geophysical survey has been completed (therefore not applicable to this job).					
			8. Have all utility locating service providers, notified by the public line locator, marked out their facilities in the vicinity of the borehole and excavation locations or otherwise notified us that they do not have any facilities near the proposed locations? (Attached confirmation and utility locate sheets from public locator)					
			9. Are all proposed borehole and excavation locations at least 1.5 meters (5 feet) from a visual line connecting two similar looking manhole covers?					
			10. Are all proposed borehole and excavation locations at least 1.5 meters (5 feet) from a visual line perpendicular to the street from the water, gas, and electrical meters?					
			11. Are all proposed boring and excavation locations clear of pavement joints, curbs, crash posts, or other engineered structures?					
			12. Does the ground surface/pavement lack signs of previous excavation (e.g., no pavement subsidence, no differences in pavement texture or relief, no pavement patching)?					
			Pre-Drilling and Excavation					
			13. Has it been verified that the proposed drilling or excavation work will not affect any work currently in progress?					
			14. Has the drill rig or heavy equipment been inspected prior to use and documented? (See Drill Rig Inspection Checklist or Mobile Equipment Safety Inspection Checklist)					
			15. Have barricades been erected to prevent unauthorized access, where applicable?					
			16. Have all known live electrical or product lines within 3 meters (10 feet) of the dig path been visually verified? If no, comment below.					
			17. For boreholes that have not been cleared or are within 3 meters of a utility:					
			a. Before drilling have you cleared a hole to 2.4 meters (8 feet) below grade using an air-knife, or equivalent, before drilling and is the diameter of this hole greater than the final outside diameter of the boring? If not required comment below.					
			b. Does the soil you encountered in the hand-dug hole appear to be native material (i.e., free of clean gravel, clean sand, aggregate base [gravelly sand ~ 10% fines] or other non-native looking material)? If not required comment below.					

Have the above concerns been discussed with the GHD project manager?	
Has the start of subsurface work been communicated to the GHD project manager?	
Have the above concerns been discussed with the client?	
Has the scope of work been approved by the client?	

🗌 Yes	🗌 No	Not Applicable
🗌 Yes	🗌 No	Not Applicable
🗌 Yes	🗌 No	Not Applicable
🗌 Yes	🗌 No	Not Applicable

Comments:

GHD field representative name:

Date:

\_\_\_\_\_



(To be used on P66 RM sites)

Site Location:	Project No.:
Date:	Name of Person Completing Form:
GHD Project Manag	er:

## **GHD Objective:**

The purpose of this checklist is to support and document compliance with the Phillips 66 (P66) HSE – Remediation Management (RM) Procedure 004 Drilling Safety Minimum Requirements Rev 0.0 issued 4/01/09. The original P66 document is located within the P66 and RM Field Safety Manual maintained by GHD on the portal, and the latest version of this document is maintained in P66 LiveLink.

The checklist is specific to hollow stem auger, flight auger, air rotary, casing hammer, mud rotary, sonic, or direct push drilling operations.

These requirements are in addition to standard GHD procedures and any other OSHA regulations, RM work procedures, and applicable site-specific procedures.

## **GHD Scope:**

- This checklist applies to all drilling work conducted by GHD and/or its subcontractor for P66 RM. The checklist shall be included in the Site-Specific Health and Safety Plan (HASP).
- One checklist must be completed for each day of drilling and maintained as part of the on-site HASP. The final, completed checklist must be filed and maintained in the permanent project file.
- If an element of this checklist is not reasonable in a particular situation, compensating safety measures can be proposed as part of a variance. The variance request must be in writing to the P66 RM Site Manager. The documented response from the P66 RM Manager shall be maintained in the HASP.



(To be used on P66 RM sites)

If an element fails, a *Stop Work Authority* must be implemented, the issues resolved, and re-checked as a "Pass" with a note and a date of correction in the Comments and/or Corrective Actions section provided.

If an element of this checklist is not reasonable in a particular situation, compensating safety measures can be proposed as part of a variance. The variance request must be in writing to the P66 RM Site Manager. The documented response from the P66 RM Manager shall be maintained in the HASP.

	General Safety and Emergency Response	Pass	Fail	N/A	Comments and/or Corrective Actions
1	Before any work is begun, including rig set up, a tailgate safety meeting, review of site specific health and safety plan, and job hazard review must be conducted at the site.				
2	The job hazard analysis must be specific to the rig to be utilized.				
3	The minimum drilling rig crew size is two 2 people.				
4	A first-aid kit must be available in an easily accessible area away from the drilling operation. Its location must be reviewed during the tailgate safety meeting				
5	At least one fire extinguisher, minimum 20#, rated for type A-B-C fires must be readily accessible, removed from mounting brackets, at the site away from the drilling rig. Its location must be reviewed during the tailgate safety meeting.				
6	The crew must have access to cell phone or 2-way radio for communication in case of emergency.				
7	Work can not be performed if lightning strikes are observed in the area.				
8	The use of cell phones is strictly prohibited during drilling. Cell phones must never be used within the exclusion zone.				
	Personal Protective Equipment (PPE)	Pass	Fail	N/A	Comments and/or Corrective Actions
1	Minimum required PPE for drilling jobs includes hard hat, safety shoes with steel toes, safety glasses or goggles, gloves and hearing protection.				
2	Appropriate PPE must be worn to prevent irritation or contamination of the skin when handling potentially contaminated articles and spoils.				
3	Hearing protection with a minimum Noise Reduction Rating (NRR) of 17 dB must be worn in the exclusion zone or when working within 20 feet of the operating rig. Most foam insert plugs and muffs meet or exceed this requirement.				
4	Secure all loose clothing, hair wraps, strings on jackets and hoods, and shoelaces. Jewelry is not allowed to be worn. Eliminate protruding tools from tool belts.				
5	A face shield must be worn for splash protection during equipment decontamination and for other activities involving splash hazards.				
6	If work is performed at a height of greater than 4 feet above ground level, a Job Hazard Analysis should be in place to address fall protection measures.				



(To be used on P66 RM sites)

	Equipment Safety	Pass	Fail	N/A	Comments and/or Corrective Actions
1	A drilling contractor will complete a checklist daily to assure that equipment is in safe and operable condition. The checklist must be available on-site for review.				
2	There will be no oil, fuel or hydraulic fluid leaks from equipment.				
3	Deck engine gauges must be in working order.				
4	Rig controls and levers, including emergency shut-off, must be legibly labeled. Wherever possible, Pinch points should be identified and labeled.				
5	Adequate cribbing must be in place under the leveling jacks and outriggers to prevent tip-over or sinking into unstable soil.				
6	Secure the rig when it is in position, but not in use. Set brakes and/or locks, chock wheels or tracks as conditions require.				
7	The exclusion zone must be marked with a continuous barrier, minimum height of 28 inches, where the potential for site visitation by the public or other pedestrians exists.				
8	The exclusion zone(s) should be large enough to safely accommodate all workers and drilling equipment.				
9	Check for adequate overhead clearance before raising the mast. Work in proximity to overhead power lines must address risk of contact with lines.				
10	Never travel with the mast of the drill rig in the raised or partially raised position.				
11	The drilling rig must be equipped with an operable emergency shut-off or "kill" switch. All persons working within the exclusion zone must know the location and operation of the emergency shut-off switch. The functionality of all emergency shut-off switches must be tested at the start of each work day.				
12	Whip checks or anti-whip devices must be in place on all pressurized hose lines.				
13	Augers, drill rods, or any down-hole equipment should be cleaned only when the drill rig is in neutral, the engine is idle, and the machinery has stopped rotating.				
14	Repair to rigs must be done by a person trained and qualified to perform the repair.				
15	Small equipment leaks that develop after the start of work must be evaluated. If the leak does not impair the performance of the equipment and the leak can be contained, work may continue.				
16	Do not perform maintenance or refueling while the equipment is operating.				
17	Use of catheads or open drum-powered winches is not allowed.				
18	Work must cease if cables or cable clamps become damaged or frayed.				
19	No body part is allowed within 12 inches of a turning auger.				



(To be used on P66 RM sites)

	Equipment Safety (con't)	Pass	Fail	N/A	Comments and/or Corrective Actions
20	Broken or substandard equipment must not be brought to the site. Equipment that becomes broken must be tagged as such and shall not be used for any purpose.				
21	Equipment must not be used if guards are not in place.				
22	Work areas must be kept in a clean and orderly condition. Tools and equipment must be stored properly when not in use.				
23	A worker must not attempt to move a load unassisted if the weight and bulk exceeds the capability of the worker. Loads greater than 50 pounds should not be repeatedly moved by a single person.				
24	Vertical storage of drill rods and augers is not allowed unless the rig is specifically designed to accommodate this practice.				
25	Drilling rods and augers may not be removed in multiple sections. Drilling rods and augers must be broken down at each joint as they are removed from the hole. Manual tools must not be used in combination with powered rotation.				
26	Rig operator and helpers must be knowledgeable of any after-market modifications to drilling equipment and be trained in its use. Use, purpose and precautions associated with after-market modifications must be specified on the procedures, job hazard analysis, or other documentation maintained at the site.				
27	If any down-hole equipment becomes stuck and normal rotation, pulling or pushing is not possible, a written procedure for this task ("fishing") must be followed.				
	Other Related Procedures	Pass	Fail	N/A	Comments and/or Corrective Actions
1	Requirements of the Phillips 66 RM HSE Procedures must be for	llowed.			
1A	Procedure for Drilling and Geoprobe Hole Clearing must be followed				
1B	Safety Knife Procedure				

		SECTION A - JOB SCOPE		
	Pre-Job Meeting/Prep HASP On-Site Orientation Meeting End of Job Evaluation Tailgate Safety Meeting Plannin Site Audit	Completed by:		
Date:	-		Project Numbe	r:
Projec	t Location:			
GHD	Project Team			
PM:		Site Supervisor:	SHO:	
Techn	ician(s):	Others:		
Comp Addre Prima Phone	ss:	Cell:	Fax:	
Comp	any Name:			
Addre	SS:			
Phone	:	Cell:	Fax:	
	onal subcontractors listed on la			
	SECTIO	N B - PROJECT SAFETY COORDINATIO	N	
1.1	High Risk Activities Confirm activities to be conducte Working at or above 6 feet ( fa Aerial lift Heavy equipment Drilling Excavation Lock-Out Tag-Out permit(s) re Hot work Hot work permit(s) required Confined space entry Confined space entry permit re Subsurface activities ATV, Snowmobile, 4 wheeler Access agreements in-hand and Permit requirements communication	Il protection) quired equired signed by property owner	Resource PM PM PM PM PM PM PM PM PM PM PM PM PM	Yes No

1.2	Guiding Principals				
	(All items identified, verified and discussed)	Resource	Yes	No	
	Safety Commitment	SMART			
	Injury Free Operation (IFO)	SMART			
	Stop Work Authority	SMART			
	Lessons Learned	SMART			
	Any unresolved safety concerns or issues	SS			
1.3	Personnel Requirements				
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	Site personnel trained to execute the Scope of Work	PM			
	Verification of all personnel's training certifications	PM			
	Potential for language barrier issues for this project	PM			
	Potential technical understanding barriers for this project	PM			
	Number of SSE(s) on site concurrent with GHD/client policy	PM			
	Short Service Employee(s) identification	PM			
	Mentor assignment for each SSE(s)	PM			
	Employees trained to use the tools/equipment	PM			
	Verification of all personnel's:				
	- Medical clearance & respirator fit test (as required)	HSE Admin			
	- Alcohol & drug clearance	HSE Admin			
	Daily personnel evaluation if they are fit to function and working safely	SS			
	Safety Health Officer required for the site	PM			
1.4	Behavior Based Safety - SMART Tools				
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	STAR (Stop Think Act Review) Process	SMART			
	Near miss/incident reporting procedure	SMART			
	STEP (Safe Task Evaluation Process)	SMART			
	At-risk behaviors and observation trends	SMART			
1.5	HASP Development & Review	_			
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	Site-specific Health & Safety Plan developed	HASP			
	Site-specific Health & Safety Plan approval by GHD HSE professional	HASP			
	System to modify the Health & Safety Plan in the field (ie., "dirty JSA")	HASP			
1.6	JSA (Job Safety Analysis)	_			
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	On-site hazard assessment	PM			
	JSA available for all tasks including those performed by subcontractors	HASP			
	Requirement to have JSA modified in the field daily (ie., "dirty JSA")	SS			
	SDSs obtained, reviewed, and hazards incorporated into JSA	HASP	1		

1.7	PPE				
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	Confirm task-specific PPE per JSA	HASP			
	System to inspect PPE before start of work	SS			
1.8	Site Emergency Response				
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	First-aid requirements	HASP			
	Minimum - one first-aid trained person on-site	HASP			
	First-aid equipment within 50 feet of risk	HASP			
	Eye wash/shower within 50 feet of risk	HASP			
	Spill response equipment inspected and available within 50 feet of risk	HASP			
	Emergency Action Plan (EAP) - specific personnel identified for key incident				
	command roles - discussed role responsibilities and actions with all site				
	personnel, mustering/meeting location set	HASP			
	Site emergency evacuation alarm confirmed	SS			
	EAP drill schedule	HASP			
	Nearest hospital confirmation	HASP			
	Nearest hardwired telephone confirmation	Site Drawing			
	Emergency shut-off switch/valve locations confirmation	Site Drawing			
	Emergency contact confirmation - coordinate with facility and client	HASP			
		пазр			
1.9	Utility Locates	_			
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	GHD and/or client-specific Subsurface Utility Clearance Protocol reviewed				
	and adhered to	PM			
	QSF-019 Property Access Form completed	PM			
	Client-specific requirements communicated to all affected employees	PM			
	One-call responses verified	PM			
1.10	Traffic Control Program				
	(All items identified, verified and discussed)	Resource	Yes	No	N/A
	Temporary Traffic Control Plan (TTCP) required	Resource PM	Yes	No	N/A
			Yes	No	N/A
	Temporary Traffic Control Plan (TTCP) required	PM	Yes	No	N/A
	Temporary Traffic Control Plan (TTCP) required TTCP provided	PM PM	Yes	No	N/A
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required	PM PM	Yes		
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b>	PM PM PM			
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> ( <i>All items identified, verified and discussed</i> )	PM PM PM			
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> ( <i>All items identified, verified and discussed</i> ) Have the following areas been considered for site control:	PM PM PM Resource			
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required Site Control (All items identified, verified and discussed) Have the following areas been considered for site control: Fencing, barricades or other identifiers	PM PM PM Resource SS			
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> <i>(All items identified, verified and discussed)</i> Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic	PM PM PM Resource SS SS SS			
	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> ( <i>All items identified, verified and discussed</i> ) Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic Safety perimeter around equipment and work zone	PM PM PM Resource SS SS			
1.11	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> <i>(All items identified, verified and discussed)</i> Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic Safety perimeter around equipment and work zone Swing radius barricades and/or signage struck-by (crush zones) reviewed	PM PM PM Resource SS SS SS			
1.11	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required Site Control (All items identified, verified and discussed) Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic Safety perimeter around equipment and work zone Swing radius barricades and/or signage struck-by (crush zones) reviewed and controlled. Equipment (All items identified, verified and discussed)	PM PM PM Resource SS SS SS	Yes	No	
1.11	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required <b>Site Control</b> <i>(All items identified, verified and discussed)</i> Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic Safety perimeter around equipment and work zone Swing radius barricades and/or signage struck-by (crush zones) reviewed and controlled. <b>Equipment</b>	PM PM <b>Resource</b> SS SS SS SS	Yes	No	N/A
1.11	Temporary Traffic Control Plan (TTCP) required TTCP provided TTCP approval by the client, if required Site Control (All items identified, verified and discussed) Have the following areas been considered for site control: Fencing, barricades or other identifiers Signage to control pedestrian traffic Safety perimeter around equipment and work zone Swing radius barricades and/or signage struck-by (crush zones) reviewed and controlled. Equipment (All items identified, verified and discussed)	PM PM PM Resource SS SS SS SS SS	Yes	No	N/A

1.13	Weather ( <i>All items identified, verified and discussed</i> ) Weather condition changes discussed - how to handle during work Weather monitoring- who is responsible Weather related hazards (heat/cold accommodations) Hold time after lightning and thunder	<b>Resource</b> HASP HASP HASP SS	Yes	No	N/A
1.14	Crew Commitment (All items identified, verified and discussed) Crew is aware of Safety Commitment that they are making	<b>Resource</b> TBD	Yes	No	N/A
1.15	Materials (All items identified, verified and discussed) SDSs availability for all HAZCOM/WHMIS regulated materials on the job site Affected employees aware of special handling instructions for hazardous materials Hazardous materials stored appropriately Plan for dealing with leftover and/or waste materials	<b>Resource</b> HASP HASP HASP WP	Yes	No	N/A
1.16	<b>Sub-Contractors</b> <i>(All items identified, verified and discussed)</i> Approval through the QSF 12, 22, 30, 31 GHD Safety Coordination Review Form completed with the subcontractor as applicable	<b>Resource</b> PM PM	Yes	No	N/A
1.17	Documentation All required QS Forms are available and attached to the project file - QSF-12 - QSF-13 - QSF-16 - QSF-19 - QSF-22 - QSF-30/31 - Meeting attendance sign in sheets Daily Tailgate sign in sheets Permits/air monitoring records STEP observation form Equipment inspection forms Client specific forms	PM PM PM PM PM PM PM PM PM PM PM PM			N/A

Action Items:	SECTION C - ACTION ITEMS	Responsible	Due Date
HASP Health and Safety Plan PM Project Manager SS Site Supervisor SHO HSE Officer			
SUBCONTRACTOR INFORMATION Company Name: Address:		_	
Primary Contact:		FAX:	
SUBCONTRACTOR INFORMATION Company Name: Address: Primary Contact:		_	
Primary Contact: Phone:		FAX:	
- Hollo			

Copies of the forms for Pre-Job Meeting and On-Site Orientation shall be maintained in the Project File

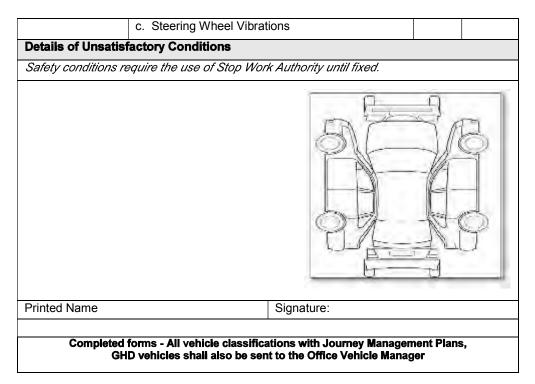


## Motor Vehicle Daily Inspection Checklist

		Short Version			
Date:		Vehicle/License	Number:		
Vehicle Operator(s	;):				
Odometer Start:		Odometer Finish	1:		
Vehicle Classificat	ion: GH	D Rental	Personal		
Pre-Departure Che	ck			Sta	tus (√)
360° Walk around c	ompleted	YESNO		Sat.	Unsat.
1. Lights	a. Headlights				
	b. Tail lights/re	ear lights			
	c. Turn signal	s/indicator			
	d. Brake lights	6			
	e. Emergency	flashers/hazard lig	hts		
	f. Service indic check, etc.)	cator lights (e.g. che	eck engine, oil		
2. Tires - visual che	ck (pressure/we	ear)			
3. Fuel level					
4. Windshield and w	vindows (cracks	or chips, clean)			
5. Windshield wiper	s (motion, cond	ition)			
6. Windshield clean	ing fluid				
7. Secure load (in p	assenger comp	artment, trunk, bed	of truck)		
8. Mirrors (cracks, b	roken, clean)				
9. Horn					
10. Paperwork (regi	stration, insurar	nce card, inspectior	n sticker, tax disc)		
11. Safety items (first vehicles only	st aid kit, fire ex	tinguisher, road ha	zard kit) - field		
12. Vehicle requiren brakes, side-impact	•••		estraints, ABS		
Post-Departure Ch	eck			Sta	tus (√)
				Sat.	Unsat.
1. Engine	a. Overheatir	ng			
	b. Oil Leaks				
	c. Knocks				
	d. Engine Lig	Ihts			
2. Transmission (S	hifting)				
3. Service indicator	lights (e.g. che	ck engine light, oil o	check, etc.)		
4. Brakes	a. Squeaking	]			
	b. Excessive	Pedal Travel			
	c. Grinding				
5. Steering	a. Alignment				
	b. Grinding				



## **Motor Vehicle Daily Inspection Checklist**





## **Safety** Inspection Checklist – Mobile Equipment Safety

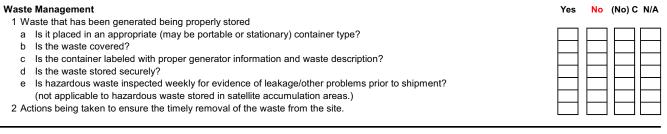
	Week End	ding:			Job No.:		Equip	ment:
(This form is	to he compl	eted daily by th	e operator Def	iciencies should	he addressed im	mediately)		
Superintendent:		cica daily by the				inculatory.)		
Date:	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.	Comments
Equipment Hours: Start:	MOII.	1065.	Weu.	murs.	<b>F</b> 11.	Jai	Sun.	Commenta
Start. Start. Start.			I					
Fluid Levels:								
Oil								
Hydraulic								
Transmission								
Radiator								
Grease Fittings								
Fuel								
Safety Checks:								
Fire Extinguisher								
Seat and Safety Belts								
Warning Devices (backup alarms, lights, etc.)								
Housekeeping								
Brakes								
Mirrors								
Windshield and Wipers								
Steering								
Horn								
Lights								
Tires								
Guards								
Instruments								
Exhaust System								
Accessories:								
Boom or Mast								
Controls								
Level Indicators								
Tracks								
Other								
Sign-Off:								
Operator's Initials Supervisor's Initials			1	1	1			

#### **Remediation - Site Safety Audit**

Audito	(s)		
Auditor e	Reference		
Site Na		Date	
1 Si 2 Th a b c d e f 3 Er 4 Er 5 No 6 Si	(Note: Any items marked "No" (and uncorrected) must to be recorded in the " <u>Findings/Action Items</u> " section. Items marked in the "(No) C" column are "No" items that were immediately corrected.) Check for the following and Safety Plan (HASP) e specific HASP is available for review. e HASP includes: A hazard analysis for each site task. description of training requirements for site workers. description of PPE to be used, based on hazard analysis. Any required medical surveillance and exposure monitoring. site control and decon measures. an Emergency Response Plan. hergency response plan addresses spill containment. hergency phone contact lists hospital/ambulance, company and client contacts. arest occupational medical clinic and hospital identified and map provided. e practices are in compliance with HASP y emergency equipment on site (fire extinguishers, first aid kit, etc.) is in ready condition.	Yes	No (No) C N/A
2 Sa 3 No 4 Sa 5 W	behavior oper lifting techniques used. fe Driving exhibited. Cell phone use while operating a vehicle or performing any work. fe body and hand position. orkers wearing required PPE. o hazards discussion held before start of work.	Yes	
2 M 3 Fl 4 Cl 5 Pr (e. 6 Pr	keeping ork area is free of trash, debris, and spills. Iterial storage is clean and orderly. Immable materials, wastes and chemicals are stored properly, containers labeled. emical storage areas in order. MSDSs available for all chemicals on site. oper signage for site and type/level of activity is in place and legible I., electrical hazards, PPE needs, fire extinguisher, exit, general warnings, state minimum and/or contractor HASP requirements) accautions taken for any hazardous insects, rodents or reptiles that may be present. accautions taken for any hazardous plants or environmental hazards (wind, heat or cold stress).	Yes	
2 Tc 2 Tc 3 In 4 Nc 5 Pr 6 Pc 7 M 8 Fi 9 W	ment and Tools uipment and tools in good condition ols are properly stored when not in use. ulation, heat tracing, wiring in good condition. missing bolts or loose nuts oper electrical grounding rtable buildings tied down chanical guards in place on rotating equipment e extinguishers inspected monthly and properly mounted off the ground re rope slings contain no kinks, crushing, bird-caging. nder wheels are not chipped or cracked.	Yes	

E	<ul> <li>Energy Hazards</li> <li>1 Equipment completely de-energized (of all forms of energy) and locked out prior to servicing.</li> <li>2 Lockout tags in place on locked out equipment.</li> <li>3 Pressurized hoses used for portable tools equipped with anti-whip device.</li> <li>4 Hose connections (&amp; tools) securely fastened to one another with locking pin</li> <li>5 Compressed air used for cleaning purpose regulated to &lt; 30 psi</li> </ul>	Yes	No	(No) C	
F	<ul> <li>PPE</li> <li>1 Respirators are stored in a clean and sanitary location.</li> <li>2 Goggles and splash protection are available where handling corrosive chemicals.</li> <li>3 Body harnesses and lanyards are clean and flexible. No cuts, frayed stitching, tearing.</li> <li>4 First aid kits are accessible and properly stocked.</li> <li>5 Transparent eye shields are available for use with grinders, drill presses and machine tools.</li> </ul>	Yes	No	(No) C	
G	Site Control         1 Current versions of permits are posted if required.         a Air permits (possibly part of facility Title V permit)         b Discharge permit (NPDES or POTW or other)         c Other (building permit, fire, Temporary Use, etc site should have list)         2 Exclusion zone/traffic control adequate.         3 Site security measures are appropriate.         4 Monitoring wells positively identified in some fashion and locked/sealed in compliance with local/state regulations	Yes	No	(No) C	> N/A
н	<ul> <li>Working at heights</li> <li>1 No bent, corroded, cracked or inoperable ladder members.</li> <li>2 Ladder tied off at the top or supported by co-worker when in use</li> <li>3 Fall protection being utilized where needed (on scaffolds, roofs, unguarded platforms &gt; 5 feet)</li> <li>4 Scaffolds inspected for visible defects by a competent person before use.</li> <li>5 Guard rails, toe boards and safety netting are adequate on scaffolds.</li> </ul>	Yes	No	(No) C	
1	<ul> <li>Hole Clearing and Excavation</li> <li>1 Hole Clearing procedure is being used by contractor and subcontractor.</li> <li>a All underground service alert providers have marked their utilities</li> <li>b The property manager been consulted to identify known utilities, piping, etc.</li> <li>c Proposed/actual boreholes at least 5 feet from any known subsurface utility.</li> <li>d Air knife or wet-hydrovac technology used to clear the hole where permitted.</li> <li>e Hole clearing to a depth of at least five feet.</li> <li>f Diameter of the cleared hole at least 120% of the diameter of the drilling auger.</li> <li>2 Spoil piles at least 2 ft from excavation.</li> </ul>	Yes	No	(No) C	N/A
L	<ul> <li>Vehicle and heavy equipment operation <ol> <li>All drivers possess drivers licenses.</li> <li>Heavy mobile equipment inspected before use each day and documented.</li> <li>Seat belts worn.</li> <li>Journey management/site traffic control plan as applicable.</li> <li>Spotters used when moving vehicles in congested areas.</li> <li>Mats under Outriggers/stabilizing jacks.</li> </ol> </li> <li>Functioning backup alarms on heavy equipment.</li> <li>Drilling rigs set up on level ground or compensating safety factors are identified.</li> <li>No dumping from dump trucks on unlevel surface.</li> <li>Overhead obstructions (such as electrical lines or pipe racks) properly marked.</li> <li>Underground obstructions and ROW's properly marked.</li> </ul>	Yes	No		

κ	Stakeholder Engagement	Yes	No	(No) C	N/A
	1 Site workers been properly trained (Stakeholder Engagement Video).				
	2 Site workers have a copy of the Stakeholder Communications Guide wallet card.				
	3 Plan is up-to-date based on current site conditions/activity and stakeholder issues/personnel changes.				
	4 Contractor has copy of current agreement/can demonstrate familiarity with all terms				
	5 Terms (scope/timing/notifications) of the access agreements regarding field work being complied with.				
	a Property owner/operator has been notified about site activities in advance per agreement terms				
	b Property owner/operator requirements/expectations are being satisfied per terms of agreement				



# M Electrical Safety Yes No (No) C N/A 1 Equipment is properly grounded. GFCIs are in working order, checked monthly or before use. Image: Conduit is complete, no missing covers or sections. Image: Conduit is complete, no missing cove

#### N Additional Exceptions (mark "Yes" and note in "Findings"

1 Additional Exception

L

- 2 Additional Exception
- 3 Additional Exception



Positive Observations:

Number	Finding / Action Item	Resolution (No) C	Responsible	Completion	Repe
1, 2, 3,	T inding / Action item		Person email	Date	Findin
##					
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##			-		1
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					1
##					
##					
					1
					1
			1	1	1

cc: Site Manager Person(s) responsible for completion of Finding/Action Item



## Health and Safety Plan Amendment Form

This document is to be completed for ANY changes that occur within the Site Health and Safety Plan (HASP). This document is to be sent to the Regional Safety & Health Manager (RSHM) for review, verification and sign off of the HASP.

Amendment #						
Site Name/Project ID						
Date						
Client Contact (same/change)						
Reason for Amendment (SOW change, JSA addition, Chemical, etc.)						
Alternate or Additional Safeguard Pro	cedures					
Required changes in PPE						
Additional Comments:						

Project Manager Notified	
RSHM Notified	
Client PM Notified (if necessary)	

Site HSE Officer (sign above)	Date

The Project Manager is ultimately responsible for the accuracy of the information on this amendment and ensuring any changes to the original HASP is discussed with all affected site personnel prior to commencing work

This original form must be placed in the project file and a copy needs to be attached to the Site Health and Safety Plan (HASP).



## Written Energy Control Procedure Template

Project Name:						Project Number:				
Name of Facility:					Maintenance or R	epair Activity:				
Equipmer	it Name:					Equipment Serial	Number:			
				Energy	So	urces Present				
Electric	cal	Chemical		Mechanical		Pneumatic     Hydraulic		Thermal		
Other:										
				S	HU	T DOWN				
	Energy Source Isolating Device Lo			Lo	cation	Action	Verification Step			
1										
2										

Note: Photos may be attached to facilitate LOTO procedure detailed above.

START UP								
	Energy Source	Isolating Device	Location	Action	Verification Step			
2								
1								

Note: Photos may be attached to facilitate LOTO procedure detailed above.

Lockout/Tagout Procedure Written By:							
Name:	SS#	Date:	Signature:				
Procedure Verification							
The procedure listed above was field tested/verified by of on the day of							
If the energy sources affecting this equipment are modified in anyway, the overall procedure should be re-evaluated.							



## **P66** Job Hazard Analysis (JHA) Review Documentation Form

Date: Time: Presenter:

Directions: JHAs are to be reviewed immediately before conducting the task(s). This form MUST be completed EACH time the task(s) is being completed by the work group. This form serves two purposes: first, to document any additional hazards that have been identified for that day and the mitigation to be used; and second, to confirm who has participated in the review of the JHA. This form shall be kept with the original JHA in the HASP.

For each JHA, document any additional specific hazards that were reviewed for the daily task, working conditions, and environment.

JHA Name:								
Additional Speci	Additional Specific Hazards and Hazard Mitigation							
JHA Name:								
Additional Speci	fic Hazards and Hazard Mitigation:							

Site Personnel Participating:

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document. As part of my work, I know I have the responsibility to STOP work with a Stop Work Authority (SWA) if conditions change and/or potential hazards have been identified.

Print Name	Signature	Company





A condition or action that has the potential for an **unplanned release** of, or **unwanted contact** with an energy source that may result in harm or injury to people, property, or the environment.



HAZARD

**IDENTIFICATION** 

CARD

YOU SEE IT, YOU OWN IT!

**Hierarchy of Controls** 

Elimination

Substitution

**Engineering Controls** 

Administrative Controls

**STOP WORK AUTHORITY** 

HAZARD

A condition or action that has the potential for an

unplanned release of, or unwanted contact with

an energy source that may result in harm or injury

to people, property, or the environment.





GHD HOTLINE: *1-866-529-4886* 

GHD HOTLINE: 1-866-529-4886

## **Energy Sources**

#### Gravity



The force caused by the attraction of all other masses to the mass of the earth.

#### Motion



The change in position of objects or substances.

#### Mechanical



The energy of the components of a mechanical system, i.e., rotation vibration, or motion within an otherwise stationary piece of equipment or machinery.



The presence and flow of an electric charge.

## Pressure



Energy applied by a liquid or gas that has been compressed or is under a vacuum.

#### Temperature



The measurement of differences in the thermal energy of objects or the environment, which the human body senses as either heat or cold.

#### Chemical



The energy present in chemicals that inherently, or through reaction, has the potential to create a physical or health hazard to people.

Biological Living organisms that can present a hazard.

#### Radiation



The energy emitted from radioactive elements or sources and naturally occurring radioactive materials (NORM).

#### Sound



Sound is produced when a force causes an object or substance to vibrate and the energy is transferred through the substance in waves.

## **Energy Sources**

### Gravity

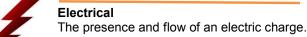
The force caused by the attraction of all other masses to the mass of the earth.



Motion The change in position of objects or substances.

#### Mechanical

The energy of the components of a mechanical system, i.e., rotation vibration, or motion within an otherwise stationary piece of equipment or machinery.



#### Pressure

Energy applied by a liquid or gas that has been compressed or is under a vacuum.

#### Temperature

The measurement of differences in the thermal energy of objects or the environment, which the human body senses as either heat or cold.

#### Chemical



The energy present in chemicals that inherently, or through reaction, has the potential to create a physical or health hazard to people.



Biological

Living organisms that can present a hazard.

#### Radiation

The energy emitted from radioactive elements or sources and naturally occurring radioactive materials (NORM).

#### Sound



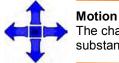
Sound is produced when a force causes an object or substance to vibrate and the energy is transferred through the substance in waves.



#### Gravity



The force caused by the attraction of all other masses to the mass of the earth.



#### The change in position of objects or substances.



#### Mechanical

The energy of the components of a mechanical system, i.e., rotation vibration, or motion within an otherwise stationary piece of equipment or machinery.



## Electrical

The presence and flow of an electric charge.



Energy applied by a liquid or gas that has been compressed or is under a vacuum.

#### Temperature

Pressure



The measurement of differences in the thermal energy of objects or the environment, which the human body senses as either heat or cold.

#### Chemical



The energy present in chemicals that inherently, or through reaction, has the potential to create a physical or health hazard to people.



#### Biological

Living organisms that can present a hazard.





The energy emitted from radioactive elements or sources and naturally occurring radioactive materials (NORM).

#### Sound



Sound is produced when a force causes an object or substance to vibrate and the energy is transferred through the substance in waves.



## **Unsafe** Act/Unsafe Condition/ Stop Work Authority (SWA) Report

Reported by:			Employee's office:				
RSHM:			Date:	Time:			
Employee's supervisor:			Employee's principal:				
Project related: 🗆 No	□ Yes		If yes, name of client:				
Client contact (if applicable):			Project no (if applicable):				
Re: (check all that apply)	Unsafe act	🗆 Un:	safe condition	$\Box$ Stop work authority (SWA)			
Location: (check one)	□ Driving	🗆 Fie	ld				
Date reported to supervisor/PM:			Date corrected:				
Time reported to supervise	or/PM:		Time corrected:				

Describe the unsafe act, unsafe condition or SWA situation

List corrective action(s) implemented

Did the corrective action	s) mitigate t	the unsafe	act/unsafe condition?
---------------------------	---------------	------------	-----------------------

For SMART administrators use only:									
Category:	Chevron category:	Causative factor:	Energy source:						
<ul> <li>PPE Personal Protective Equipment</li> <li>BP Body Positioning</li> <li>WE Work Environment</li> <li>OP Operating Procedures</li> <li>TE Tools and Equipment</li> <li>CU Computer Usage</li> <li>PD Pre-Driving</li> <li>OPP Operating Procedures – Parking</li> </ul>	<ul> <li>A Person or People</li> <li>B Equipment</li> <li>C Environmental</li> <li>D Procedures/ Processes/ JSA-review/revise</li> <li>E Visitors</li> </ul>	<ul> <li>Insufficient training for task</li> <li>Hurrying to complete the task</li> <li>Easier if proper process not followed</li> <li>Took shortcuts without prior incident</li> <li>Incomplete or no procedures</li> <li>Procedures not known or enforced</li> <li>Improper PPE</li> <li>Improper tools</li> <li>Improper workplace layout</li> <li>Exposure to conditions</li> </ul>	<ul> <li>G Gravity</li> <li>M Motion</li> <li>ME Mechanical</li> <li>E Electrical</li> <li>P Pressure</li> <li>T Temperature</li> <li>B Biological</li> <li>C Chemical</li> <li>R Radiation</li> <li>S Sound</li> </ul>						
Are additional actions required?	$\Box$ No $\Box$ Yes If yes, w	hat?							





## Field Safe Task Evaluation Process (F-STEP)

Report status:								
(insert date)	Initial report	Updated report	Updated report Final report		validation	Report input to SMART database		
Observer's name:				Date: Time:				
Client:			Pr	Project name: :				
Observer's office:				Site location:				
Observer's supervisor:				Project no. (if applicable):				
Subcontractor: 🗆 Yes 🗆 No Subcontractor compan				ny name:				
Eoodback condu	inted by:				Data:			

Feedback conducted by:	Date:
Observee's supervisor:	Time:

Check task being (if not listed here, go to		If checking this column, write in the specific task
🗆 Air knifing	□ Mob/demob	□ Agricultural services
□ Clearing	Project oversight	
	Soil sampling	□ Landfill
□ Drilling	Stack testing	□ Office operations
Electrical work	Surveys & audits	
□ Excavation	□ Traffic control	
□ General site cleaning	UST removal	Refinery
□ Heavy equipment operations	□ Water sampling	Treatment plants
🗆 IH sampling	🗆 Well management	□ Other
Manual lifting		

Background information (give a brief description of task being performed and your surroundings)

## Observer's positive comments

2.

۷.

3.

Feedback session conclusion: If no questionable Items: brief recap of positive actions/comments. If questionable Items: brief recap of positive actions/comments and why did the questionable item(s) occur.





Personal protective equipment	Meets work standards	777	N/A	Evaluation comments
Hearing protection (e.g., ear plugs)	Juinding			
<ol> <li>Head protection (e.g., bard hat)</li> </ol>				
3. Eye protection (e.g., safety glasses/goggles)				
<ol> <li>4. Hand protection (e.g., gloves)</li> </ol>				
5. Foot protection (e.g., steel-toe boots)				
6. Respiratory protection				
7. Fall protection (e.g., lanyard/harness)				
8. High visibility clothing (e.g., work vest)				
9. First aid kit/fire extinguisher				
10. Other (be specific)				
Body position	Meets work standards	???	N/A	Evaluation comments
11. Proper body positioning when exerting force (lifting/pushing/pulling)				
12. Pinch points/moving equipment - hands/body placement				
13. 3-points of contact				
14. Other (be specific)				
Work environment	Meets work standards	777	N/A	Evaluation comments
15. Work/walk surface clear (free and clear pathway)				
16. Housekeeping/equipment storage				
<ol> <li>Controlled work zone (e.g., warning devices, barricades, cones, flags)</li> </ol>				
18. Emergency stop/safety switches				
19. Materials labeled correctly				
20. Storage/disposal of waste				
21. Other (be specific)				
Operating procedures	Meets work standards	777	N/A	Evaluation comments
22. Star performed/job planning				
23. Stop work authority process – understood and considered				
24. JSA/JLA/risk assessment reviewed and followed				
25. Daily site inspection				
<ol> <li>High risk task specific (hot work, confined space, LOTO, excavation/trenching)</li> </ol>				
27. Inspect work zone for hazards				
28. Coordinate/communicate with site rep and/or others on site				
29. Spotters used appropriately				
30. Underground/overhead utilities identified				
31. Other (be specific)				
Tools/equipment	Meets work standards	777	N/A	Evaluation comments
32. Hand/power tool - selection, condition, and use				
<ul> <li>33. Field/test equipment - selection, condition, and use</li> </ul>	1			
	1			
<ol> <li>Heavy equipment - selection, condition, and use</li> <li>Other (be specific)</li> </ol>				
35. Other (be specific) Observation total occurrences				
% observations to meet work standards				
	Meets works			
Item specific to work task Insert task/JSA/SOP Step	standards	???	N/A	Evaluation comments
Insert task/JSA/SOP Step				
Insert task/JSA/SOP Step				
montainionioni olep	I			

	Causative factors and	Verification (Did we do what we said we would do?) and Validation (Is it working?)					
CF	Corrective actions (must match causative factor)	Responsible party	Date due	Date completed	Verified by/ Validated by	Date	Details
					Verified by:		
					Validated by:		
					Verified by:		
					Validated by		
					: Verified by:		
					Validated by:		
					Verified by:		
					Validated by:		
	CF	Corrective actions		Corrective actions Responsible	Corrective actions Responsible Date	Causative factors and corrective actions       Pate out on the second of the s	Causative factors and corrective actions       Validation         CF       Corrective actions (must match causative factor)       Responsible party       Date due       Date completed       Verified by/ Validated by       Date         Image: Im

#### **Causative factors**

Personal factors			Company factors	External factors		
1	Insufficient training for task	5	5 Incomplete or no procedures		Exposure to conditions	
2	Hurrying to complete the task	6	Procedures not known or enforced			
3	Easier if proper process not followed	7	7 Improper PPE			
4	Took shortcuts without prior incident	8	Improper tools			
		9	Improper workplace layout			



## **Driving** Safe Task Evaluation Process (D-STEP)

	Report status: (insert date)	Initial report	Updated report	Final repor	port Verification/validation		Report input to SMART database		
Observer's name:					Date:	Time:			
Client:					Project name:				
Observer's office:					Site location:				
Observer's supervisor:					Project no. (if applicable):				
ľ	Subcontractor:	🗆 Yes 🗆 N	lo Subcontrac	ctor company	name:				
	Observer's nam Client: Observer's offic Observer's sup	e: ervisor:	lo Subcontrac	F S F	Project name: Site location: Project no. (if applicable):				

Feedback conducted by:	Date:
Observee's supervisor:	Time:

Driving conditions							
Freeway/interstate	□ Wet	🗆 Day	🗆 Raining				
Surfaced street	🗆 Dry	🗆 Night	🗆 Windy				
🗆 Dirt road	□ Snow/ice		🗆 Snowing				
	□ Mud		🗆 Fog				

Vehicle condition							
🗆 Car	🗆 Truck	🗆 Van	Pulling trailer				
Company owned	Rental	Personal					

Background information (Give a brief description of where you are driving from and to and your surroundings)

#### **Observer's positive comments**

1.

2.

3.

Feedback session conclusion: If no questionable Items: brief recap of positive actions/comments If questionable Items: brief recap of positive actions/comments and why did the questionable item(s) occur?





		Meets work		Ĩ	
Pre	-driving	standards	???	N/A	Evaluation comments
1.	JMP/JSA/Risk Assessment developed and/or reviewed				
2.	STAR performed/job planning				
3.	Stop Work Authority – understood and considered				
4.	Registration/insurance/last maintenance report				
5.	Tire inflation and tread				
6.	Wipers and washer fluid/clean windows/mirrors				
7.	Horn/lights operation/instrument panel				
8.	Body damage/overall vehicle appearance				
9.	Under-vehicle check for leaks/obstructions				
10.	Secure loose items				
11.	Check fluid levels				
12.	Fire extinguisher/triangles/first aid kit/jack/spare				
13.	Verifies area is clear before moving vehicle				
Вос	ly positioning	Meets work standards	???	N/A	Evaluation comments
	Adjust seat				
	Adjust head rest				
	Adjust mirrors to minimize blind spots				
	Seat belts (driver/passengers)				
18.	Locks doors				
Ope	erating procedures	Meets work standards	???	N/A	Evaluation comments
-	Yields right-of-way and allows other vehicles to merge, change lanes,	Charlad			
10.	tum				
20.	Respects pedestrians, cyclists, other drivers				
21.	Is courteous/tolerant of others' poor driving				
22.	Two hands on wheel no higher than 9 and 3				
	Skill in handling distractions				
24.	Adjusts to traffic conditions (speed / traffic)				
25.	Uses turn signals (for turns and lane changes)				
26.	Following distance is appropriate (4-second rule)				
27.	Avoids sudden acceleration and deceleration				
	Before backing up, looks behind vehicle/checks for traffic, pedestrians, parked vehicles, uses spotter				
29.	Scans the road ahead (15-second eye lead or 2-3 blocks-1/4 mile) and anticipates actions of others to avoid sudden swerves, stops, lane changes				
30.	Checks mirrors every 5-8 seconds				
31.	Checks for hazards on the road (e.g., animals, debris, road conditions)				
32.	Reads and obeys traffic signals				
33.	Makes complete stops at signals, at a safe distance				
	Scans intersection left and right/anticipates intent of other vehicles before reaching "point of no return"				
35.	Covers brakes safely and adjusts speed				
	Does not use cell phone during operation of vehicle				
37.	Other (be specific)				
Оре	erating procedures - parking	Meets work standards	???	N/A	Evaluation comments
38.	Looks for pull through parking before backing in				
39.	Uses signals, leaves adequate space before pulling back into lane				
40.	Obeys signs and uses signals in parking lot				
41.	Maintains proper speed inside the lot				
	Ensures vehicle is legally/properly parked				
	Sets parking brake and secures vehicle				
44.	Other (be specific)				
	ervation total occurrences				
	bservations to meet work standards				
	specific to work task	1		1 =	
	rt Task/JSA/SOP Step				
inse	rt Task/JSA/SOP Step				

		Causative factors and c	Verification (Did we do what we said we would do?) an Validation (Is it working?)					
ltem No.	CF	Corrective actions (must match causative factor)	Responsible party	Date due	Date completed	Verified by/ Validated by	Date	Details
						Verified by:		
						Validated by:		
						Verified by:		
						Validated by:		
					_	Verified by:		
						Validated by:	_	
						Verified by:		
						Validated by:		

#### **Causative factors**

	Personal factors		Company factors	actors External factors	
1	Insufficient training for task	5	Incomplete or no procedures	10	Exposure to conditions
2	Hurrying to complete the task	6	Procedures not known or enforced		
3	Easier if proper process not followed	7	Improper PPE		
4	Took shortcuts without prior incident	8	Improper tools		
		9	Improper workplace layout		

## Appendix B Job Safety Analysis Sheets



## **Job Hazard Analysis (JHA)**

#### **Monitoring Well Sampling**

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	7105	2				
Specific Task	Monitoring well sampling/gauging						
Key equipment:	Sampling pump or bailers; photoionization detect	tor; safety co	ones/barricades				
Task-specific training:	Groundwater Sampling Procedures; reference H	ASP for add	itional site/client safety training r	equirement			

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🛛 Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	🗌 P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	🗌 R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date	
Name	Signature	mounied by	Noviewed by	Date	
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Coordinate site access	Delays or added work	<ul> <li>Notify Station Manager of schedule</li> <li>Notify other required personnel if applicable (city, regulators, private property owners, etc.)</li> </ul>		
2	Mobilize with proper equipment/ supplies for sampling	<ul> <li>Delay or improper/unsafe performance of work due to improper equipment on site</li> <li>Cross-contamination of wells</li> </ul>	<ul> <li>Review work plan to determine equipment/supply needs</li> <li>Make sure all sampling/gauging equipment is decontaminated</li> <li>Bring ice for sample storage</li> <li>Review THE HASP and gather necessary PPE</li> </ul>		
3	Notify other personnel on site	<ul> <li>Unknown traffic or other work hazards</li> <li>Lack of communication between all interested parties</li> </ul>	Meet with station attendant or other site     personnel and explain planned activities		
4	Determine sampling order	<ul> <li>Cross-contamination of samples and wells due to incomplete decontamination of sampling equipment</li> </ul>	Review prior analytical results and set sampling order from lowest to highest concentration wells		
5	Perform STAR and tailgate safety meeting upon arrival at site	<ul> <li>Consider worst-case scenario (including weather conditions)</li> </ul>	<ul> <li>Review HASP with co-workers</li> <li>Highlight aspects identified by HASP and, if necessary, add to HASP</li> <li>Get signature of all co-workers on HASP</li> </ul>		
6	Set up exclusion zone(s)	<ul> <li>Injury or exposure to public or other on-site personnel</li> <li>Slip/trip/fall hazards</li> </ul>	<ul> <li>Wear glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Implement exclusion zone setup instructions of THE HASP (barricades, caution tape, cones, etc.)</li> <li>Set up work area free of trip hazards</li> </ul>		
7	Gauge water levels and product thickness (where applicable) in wells	<ul> <li>Back strain</li> <li>Inhalation or dermal exposure to chemical hazards</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Initiate air quality monitoring in accordance with the HASP</li> <li>Maintain safe distance from well head</li> <li>Bend at knees, not waist</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
8	Purge well(s) and collect purge water	<ul> <li>Cross-contamination</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Inhalation or dermal exposure to chemicals</li> <li>Slip/trip/fall hazards</li> <li>Spilling contaminated water</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Decontaminate purging equipment between each sampling location</li> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Use PPE and monitoring in accordance with the HASP</li> <li>Keep work area clear of tripping or slipping hazards</li> <li>Store purge water in appropriate containers</li> </ul>		
9	Collect samples in accordance with sampling plan	<ul> <li>Cross-contamination</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Inhalation or dermal exposure to chemical hazards</li> <li>Slip/trip/fall hazards</li> <li>Improper labeling or storage</li> <li>Injury due to acid burn (unsealed or leaking sample bottle)</li> <li>Injury from broken sample bottle (cuts or acid burn)</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Decontaminate sampling equipment between each well (unless disposable)</li> <li>Refer to step 9 and the HASP for additional lifting methods</li> <li>Label samples in accordance with sampling plan</li> <li>Keep samples stored in proper containers, at correct temperature, and away from work area</li> <li>Wear nitrile gloves when handling bottles</li> <li>Handle bottles carefully</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
10	Dispose or store purge water onsite	<ul> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Exposure to chemicals</li> <li>If disposing through on-site treatment system, damage or injury from improper use of equipment</li> <li>Improper storage or disposal</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Use proper equipment to transport water (pumps, drum dollies, etc.)</li> <li>Refer to step 9 and the HASP for additional lifting methods</li> <li>Where PPE in accordance with the HASP</li> <li>Review any necessary instructions for use of on-site treatment systems</li> <li>Label storage containers properly and locate in isolated area away from traffic and other site functions</li> <li>Coordinate off-site disposal (where applicable)</li> </ul>		
11	Clean site/demobilize	<ul> <li>Traffic</li> <li>Nuisance or safety hazard left on site</li> <li>Back strain</li> </ul>	<ul> <li>Wear a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Use buddy system as necessary to remove traffic control</li> <li>Leave site clean of refuse and debris</li> <li>Notify station personnel of departure, and note any purge water left on site</li> <li>Exercise caution when lifting coolers out of the trunk of a car; use the buddy system if justified</li> </ul>		
12	Package and deliver samples to lab	<ul> <li>Bottle breakage</li> <li>Improper temperature</li> <li>Exceeding hold times</li> <li>Improper completion of Chain of Custody (COC)</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Pack samples in ice, use bubble wrap/bags for sample bottles</li> <li>Use standard COC forms and labels</li> <li>Submit samples to lab as soon as possible (no more than 3 days, but check sampling plan for any special requirements such as rush turnaround or special hold time restrictions)</li> </ul>		

- (1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.
- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

#### Site personnel participating in JHA review:

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

HY	10	U
Z.	M	E
	MENT & P	EOPLE

SSE(s) on job:	Assigned mentor:
Presenter signature:	Date/time:
My signature below indicates that all conditions and met, and reviewed with all affected personnel prior t	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone	number):

Supervisor signature documenting daily debrief has been completed:



## **Job Hazard Analysis (JHA)**

#### Remediation System O&M System Check

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. CRA personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	7105	-				
Specific Task	Remediation System O&M system check	Remediation System O&M system check					
Key equipment:	Manometer						
Task-specific training:	0-Hour HAZWOPER; P66 On-boarding; Lock-out/Tag-out						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	☐ Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	⊠ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	🗌 R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team I Name Signature		Modified by	Reviewed by	Date	
		mouned by	Neviewed by		
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Discuss STAR and SWA Expectations	Site personnel/ subcontractors not aware of STAR process and SWA	<ul> <li>Project team to discuss importance of and documentation procedures for SWA during pre-job safety/tailgate safety meeting</li> <li>Use STAR and SWA to stop any work that is unsafe.</li> </ul>		
2	Inspect PPE for suitability and service	Lack of expected protection from hazards	Replace all questionable PPE identified		
3	Establish work zone and system monitoring and sampling	<ul> <li>Traffic</li> <li>Hydrocarbon exposure</li> <li>Hot surfaces</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> <li>Noise</li> </ul>	<ul> <li>Review site traffic control plan and set up traffic controls accordingly</li> <li>Use buddy system for placing traffic control</li> <li>Never work with you back to traffic</li> <li>Wear gloves that approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard</li> <li>Utilize appropriate monitoring equipment in accordance with the HASP</li> <li>Do not contact with hot oxidizers, pumps, and motors</li> <li>All hot surfaces must be labeled and protected whenever possible</li> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Don ear plugs when entering operating equipment compound</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	ask activity Potential hazard(s) <sup>(2)</sup> Mitigating Measures		Person responsible (Print first and last names)	Verified by (Print first and last names)
4	System maintenance and troubleshooting (routine maintenance and troubleshooting only)	<ul> <li>Electrocution from motors, actuators, pumps, and panels</li> <li>Mechanical hazards from moving shafts, belts, and compressed air</li> <li>Chemical exposure</li> </ul>	<ul> <li>Use Lockout/Tagout procedures prior to working on electrical equipment</li> <li>Ensure all stored energy is bled off</li> <li>Use a volt meter to verify the panel has been turned off</li> <li>Visually check that all mechanical guards are in place when equipment is running</li> <li>Never work on moving equipment</li> <li>Wear gloves that approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard in conjunction with appropriate chemical resistant PPE</li> <li>Never use PPE that is non-compatible with the chemical you are working with</li> </ul>		
5	Site cleanup	<ul> <li>Traffic hazards</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> </ul>	<ul> <li>Use buddy system as necessary to remove traffic control</li> <li>Do not work with your back to traffic</li> <li>Wear traffic vest</li> <li>Wear gloves that approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard</li> <li>Leave site clean of refuse and debris</li> <li>Refer to step 1 and the HASP for additional lifting methods/information</li> </ul>		

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress/ergonomics/lifting techniques; Exposure - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JHA review: I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

SSE(s) on job: \_\_\_\_\_



Presenter signature:	Date/time:
My signature below indicates that all conditions and requirem met, and reviewed with all affected personnel prior to start of	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone number):	
Supervisor signature documenting daily debrief has been con	npleted:

Assigned mentor: \_\_\_\_\_



## **Job Hazard Analysis (JHA)**

#### Remediation System O&M System Cleaning

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. CRA personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	7105	-				
Specific Task	Remediation System O&M system cleaning	Remediation System O&M system cleaning					
Key equipment:	Proper cleaning solution for task						
Task-specific training:	I0-Hour HAZWOPER; P66 On-boarding; Lockout/Tagout						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	☐ Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	🗌 R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date	
Name	Signature		Noviewed by	Pale	
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Discuss STAR and SWA expectations	Site personnel/subcontractors not     aware of STAR process and SWA	<ul> <li>Project team discuss importance of and documentation procedures for SWA during pre-job safety/tailgate safety meeting</li> <li>Use STAR and SWA to stop any work that is unsafe.</li> </ul>		
2	Inspect PPE for suitability and service	Lack of expected protection from potential hazards	Replace all questionable PPE identified		
3	Establish work zone and system evaluation	<ul> <li>Traffic</li> <li>Hydrocarbon exposure</li> <li>Hot surfaces</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> <li>Noise</li> </ul>	<ul> <li>Review site traffic control plan and set up traffic controls accordingly</li> <li>Use buddy system for placing traffic control</li> <li>Never work with you back to traffic</li> <li>Wear gloves approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard</li> <li>Utilize monitoring equipment in accordance with the HASP</li> <li>Avoid contact with hot oxidizers, pumps, and motors</li> <li>Hot surfaces must be labeled and protected whenever possible</li> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Don ear plugs when entering operating equipment compound</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
4	System maintenance and troubleshooting (routine maintenance and troubleshooting only)	<ul> <li>Electrocution from motors, actuators, pumps, and panels</li> <li>Mechanical hazards from moving shafts, belts, and compressed air</li> <li>Chemical exposure</li> </ul>	<ul> <li>Use Lockout/Tagout procedures prior to working on electrical equipment</li> <li>Ensure all stored energy is bled off</li> <li>Use a volt meter to verify the panel has been turned off</li> <li>Visually check that all mechanical guards are in place when equipment is running</li> <li>Never work on moving equipment</li> <li>Wear gloves approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard in conjunction with appropriate chemical resistant gloves</li> <li>Never use PPE that is non-compatible with the chemical you are working with</li> </ul>		
5	System pump and air stripper cleaning (removal of iron build up using muriatic acid)	<ul> <li>Electrocution from motors, actuators, pumps, and panels</li> <li>Mechanical hazards from moving shafts, belts, and compressed air</li> <li>Chemical exposure/exposure to contaminants (inhalation, dermal contact)</li> <li>Lifting hazards/back injury</li> <li>Manual material handling</li> <li>Slip/fall hazards</li> </ul>	<ul> <li>Use Lockout/Tagout procedures prior to working on pumps and scrubber equipment</li> <li>Ensure all stored energy is bled off</li> <li>Visually check that all mechanical guards are in place when equipment is running</li> <li>Never work on moving equipment</li> <li>Wear gloves approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard underneath the proper chemical resistant gloves</li> <li>Never use PPE that is non-compatible with the chemical you are working with</li> <li>Use proper body positioning and lifting procedures</li> <li>Set up workstation with clear walking paths to all locations</li> <li>Keep work area tidy and free of loose equipment</li> </ul>		
6	Site cleanup	<ul> <li>Traffic hazards</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> </ul>	<ul> <li>Use buddy system as necessary to remove traffic control</li> <li>Do not work with your back to traffic</li> <li>Wear traffic vest</li> <li>Wear gloves approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 33xx Testing Standard</li> <li>Leave site clean of refuse and debris</li> <li>Refer to step 1 and the HASP for additional lifting methods/information</li> </ul>		

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught - victim is caught on, caught in or caught between objects; Fall - victim falls to ground or lower level (includes slips and trips); Exertion - excessive strain or stress/ergonomics/lifting techniques; Exposure - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JHA review: I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date		

SSE(s) on job: \_\_\_\_\_



Presenter signature:	Date/time:
My signature below indicates that all conditions and requirement met, and reviewed with all affected personnel prior to start of w	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone number):	
Supervisor signature documenting daily debrief has been com	pleted:

Assigned mentor: \_\_\_\_\_



### **Routine O&M Activities**

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM					
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105						
Specific Task	Routine O&M activities							
Key equipment:	Multi Phase Extraction (MPX) System	Multi Phase Extraction (MPX) System						
Task-specific training:	40-Hour HAZWOPER; P66 On-boarding; HAZCOM							

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	☐ Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	🗌 P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	Haz Cat 4	□ R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date	
Name	Signature	mounied by		Date	
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Tailgate safety meeting	<ul> <li>Not identifying all hazards while performing tasks</li> <li>Injury</li> <li>Property damage</li> <li>Discuss work to be performed and associated hazards with GHD personnel and subcontractors</li> <li>Include discussion on hospital route, evacuation procedures, and emergency contacts; complete daily tailgate forms</li> <li>Discuss site-specific requirements for working on facility</li> <li>Refer to task-specific JHAs for other O&amp;M activities</li> </ul>			
2	Discuss STAR and SWA	Site personnel (GHD and subcontractors) not aware of STAR and SWA	<ul> <li>Project team (GHD) discusses importance of and documentation procedures for SWA during pre-job safety meeting</li> <li>Determine whether current procedures and JHAs are adequate for the task at hand; if procedures/JHAs are not adequate, GHD personnel will need to re-evaluate and develop proper procedures and JHAs before proceeding with tasks</li> <li>Use SWA to stop any work that is unsafe</li> </ul>		
3	Routine O&M activities	Slip/trip/fall hazards	<ul> <li>Keep work areas and walkways free of excess materials and debris to reduce trip hazards</li> <li>Keep all work surfaces dry when possible</li> </ul>		
		Heat and cold stress	<ul> <li>Take breaks if you feel tired or start to sweat excessively</li> <li>Consume adequate food/beverage – keep hydrated</li> </ul>		
		Biological hazards	<ul> <li>Inspect work area upon arrival to identify biological hazards (snakes, insects, poisonous plants, etc)</li> <li>Open enclosures slowly and cautiously while looking for the possible presence of biological hazards</li> </ul>		
		• Fire/explosion	<ul> <li>Do not smoke in work area</li> <li>Ensure that there are two 20-pound fully charged fire extinguishers in the trailer (as per owner's requirements) and perform monthly inspection of each unit</li> <li>Ensure that a fire watch is implemented for activities that involve hot work and ensure that the fire watch procedure meets the requirements of the facility</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
		<ul> <li>Equipment containing impact, high temperature, or pressurized liquids and gases (pneumatic pumps, compressors, piping, etc.)</li> </ul>	<ul> <li>Perform Lock-out/Tag-out (LOTO) procedures</li> <li>Drain and relieve pressure from lines before opening or loosening fittings</li> <li>Wear appropriate PPE require for task at hand</li> <li>Inspect tools prior to use, if faulty, do not use</li> <li>Avoid potential hot surfaces and ensure that potential hot surfaces are labeled</li> </ul>		
		Contaminated materials	Wear appropriate PPE required for task at hand		
		High noise levels	Hearing protection must be worn while working around operating equipment		
		Moving equipment	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Keep hands and loose clothing away from moving equipment</li> </ul>		
		Sharp materials	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> </ul>		
		<ul> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> </ul>	<ul> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> </ul>		
		Electric/battery contact	<ul> <li>Ensure electrical service has been shut down and follow LOTO procedures to ensure power remains off prior to opening panel or working on electrical components</li> <li>Inspect power tools/electrical cords prior to use, if faulty do no use until repaired or replaced</li> <li>Electrical cords must be grounded and inserted into a GFCI outlet</li> </ul>		

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- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

Site personnel participating in JHA review: I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date		

SSE(s) on job: \_\_\_\_\_



Presenter signature:	Date/time:
My signature below indicates that all conditions and requirement met, and reviewed with all affected personnel prior to start of v	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone number):	
Supervisor signature documenting daily debrief has been com	pleted:

Assigned mentor: \_\_\_\_\_



### Sodium Persulfate Storage, Preparation, and Injection Activities

Date issued/revised:	10/22/2015	Client:	Phillips 66 RM					
Project Number:	075015	Created By	Cale Kanack	Sim OPS	Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, NM							
Specific Task	Storage, preparation, and injection of sodium per	Storage, preparation, and injection of sodium persulfate solution						
Key equipment:	Storage pad/mixing pad; mixing equipment, pumps, tanks, hoses, spill control materials, 15 minute eyewash							
Task-specific training:	40-Hour HAZWOPER/current 8 hour refresher; HAZCOM (SE	40-Hour HAZWOPER/current 8 hour refresher; HAZCOM (SDS for NaOH and Na <sub>2</sub> S <sub>2</sub> O <sub>8</sub> , & BioSolve ); Conoco Phillips SLS, Any Site & Client Specific training per the						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🛛 Class E (standard)	Level 2 Light duty with protection	☑ Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	🗌 High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	⊠ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
☐ Rubber boots (industrial grade)	Use Natural Rubber (or other appropriate for Sodium Hydroxide and Klozur SP ISCO materials) gloves over impact & cut resistant to protect from chemical and cut exposures anytime concentrated chemicals are being transferred.	Required	🔲 Haz Cat 4	☐ R95		Other * FR & Chemical Resistant Clothing; Chemical Resistant Overboots appropriate for materials used.

Hip waders			Organic vapor	
	*see key equipment		Specialty/other*	

Project Devel	opment Team			Modified by		Reviewed by		Date			
Name		Signature							Date		
Jeff Walker							[			[	
Christine Ma	athews	]									
Cassie Brov	vn						[				
Cale Kanacl	k								1		1
Job steps <sup>(1)</sup>	Task activity		Potential hazard(s	5) <sup>(2)</sup>	•	litigating Measures			Person resp (Print first a names)		Verified by (Print first and last names)
1	Review STAR and S	SWA	Site personnel no	t aware of		importance of and o for SWA during pre- Health and safety le commitment contra – Both the health personnel will contract once i The commitment ca personnel once revi Ensure that proper site including hard l boots, safety glasse gloves in accordance Guideline	document -job safety eader discu act with sin n and safe sign the co reviewed ard will be iewed PPE will be had, safety s, and the re with the PPE should cle and at	ation procedures y meeting usses the COP te personnel ty leader and site ommitment signed by site e used while at the y vest, steel-toed prescribed work e Glove Selection I be worn when the site			

	Storage and preparation of solution and decontamination of equipment, personnel, and soil	<ul> <li>Slip/trip/fall hazards when placing chemical in temporary storage boxes or other lined storage pads</li> <li>Heavy lifting</li> <li>Incompatibility with other chemicals</li> <li>Incompatibility with metals, materials</li> <li>Release to environment and human exposure</li> </ul>	<ul> <li>Inspect work areas before access for obstructions, moisture, and clear pathways</li> <li>Pick up chemical totes and pallets with forklift and position them for storage</li> <li>Keep dry chemical containers closed when not in use</li> <li>Use water to suppress fire; contain runoff. Do not use CO<sub>2</sub> or gas filled extinguishers on this material.</li> <li>Lift no more than one bag of oxidizer and keep it close to your body</li> <li>Carry with two hands in front of you to avoid back stress, or get assistance</li> <li>Lift bag to carrying position using heavy lifting techniques, keeping back vertical and straight, lifting with leg muscles as opposed to back muscles</li> <li>Keep discharge valve on tote or tank tightly closed when not opened for mixing</li> <li>Store in cool, dry, ventilated location away from greases, oils, heat, or ignition sources</li> <li>Do not store in close proximity to water, acids, organics</li> <li>Do not store on or near wood, metal salts, peroxides, or reducing agents</li> <li>Avoid use of reactive metals – Aluminum, Iron, brass, copper, galvanized pipe. Plastics and Stainless steel are acceptable</li> <li>Solution preparation area must be lined with plastic sheeting to prevent spillage onto soil or work to be conducted over area to be treated</li> <li>When handling liquid chemical, wear nitrile gloves, Poly-coated tyvek overalls, goggles, and full-face shield</li> <li>After being mixed into solution, close container and revert to Modified Level D for all work involving the Na<sub>2</sub>O<sub>8</sub>S<sub>2</sub> solution</li> <li>Have neutralizing solution (water) on hand in sufficient quantity for managing splashes to clothing or ground surface and equipment</li> <li>Allow no more than one person in chemical mixing area if possible and keep all containers of prepared liquid solution closed/covered at all times</li> <li>Modified Level D with full-face splash shields and rubber aprons and boots</li> </ul>		
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3	Use of electric pumps or mixers for chemical	•	Electrical hazard	•	GFCI device must be used		
	transfer or mixing	•	Shock hazard	•	Keep all extension cords out of wet areas.		,
		•	Wet environment	•	Do not run extension cords through puddles or		
					over open tanks.		
				•	Generators must be placed securely on bare		
					ground surfaces. Do not use a generator in a		
					truck bed.		
				•	Do not use electrical devices in potentially		
					explosive atmospheres		
4	Injection of solution into subsurface	•	Pressurized line rupture, spillage	•	All personnel within direct proximity of pumps,		
		•	Disconnection drips and		lines, rig, drill-string and probe should wear		
			associated releases		full-face splash shields, goggles, rubber aprons		
					and boots and nitrile gloves		
				•	Depressurize and bleed lines to buckets or		
					open top drums containing water before		
					opening connections or fittings on (potentially)		
					pressurized lines		
				•	On shutdown, avoid trapping catalyzed		
					solution in valves, fittings, hoses, balls in ball		
					valves, pumps, etc. due to possible pressure		
					build-up. Always allow one end of any trap		
					points to be open to relieve pressure.		
				•	Watch for emanation of liquid from other		
					boreholes, creek banks, and monitoring wells in		
					the area during injection		
				•	Stop injection if excessive pressure (greater		
					than 0.7 times the injection depth) is		
					experienced or releases are evident, or if any		
					other unusual condition is observed (off-		
					gassing, vapors, return to ground surface, etc).		
				•	Inspect for leaks on all fittings and lines from		
					solution batch tank to injection well prior to		
					use		
				•	Modified Level D with full-face splash shields,		
					goggles, tyvek, and boots		
				•	Have 15 minute eyewash available in case of eye		
					exposure		

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- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
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Name/Company	Sign	Date			

SSE(s) on job: \_\_\_\_\_

<b>HYOU</b>	

Presenter signature:	Date/time:
My signature below indicates that all conditions and requined, and reviewed with all affected personnel prior to state	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone num	ber):

Assigned mentor:



### **Chemical Handling and Transfer**

Date issued/revised:	10/22/2015	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Cale Kanack	Sim OPS Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, NM						
Specific Task	Chemical handling and chemical transferring – IS	SCO or pH a	djustment				
Key equipment:	Storage pad/mixing pad; mixing equipment, pumps, tanks,	Storage pad/mixing pad; mixing equipment, pumps, tanks, hoses, spill control materials, 15 minute eyewash					
Task-specific training:	40-Hour HAZWOPER, 8-Hour Refresher, Hazard Communica the HASP	ition. Superviso	or shall be training in CPR, First Aid, and have	Supervisor Training. SLS,	Any Site & Client Specifi	c training per	

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🖾 Class E (standard)	Level 2 Light duty with protection	🖾 Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			🗆 N95		Long sleeve shirts
Foot Protection	🗌 High viz	Hearing protection	Arc flash	🗆 P100		Paper tyvek
Industrial grade safety boot	⊠ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
☐ Rubber boots (industrial grade)	Use Natural Rubber (or other appropriate for Sodium Hydroxide and Klozur SP ISCO materials) gloves over impact & cut resistant to protect from chemical and cut exposures anytime concentrated chemicals are being transferred.	Required	🗌 Haz Cat 4	☐ R95		Other * FR & Chemical Resistant Clothing; Chemical Resistant Overboots appropriate for materials used.

Hip waders			Organic vapor	
	*see key equipment		Specialty/other*	

Project Development Team			Modified by		Reviewed by		Date				
Name		Signature		modified by		Reviewed by			Date		
Jeff Walker							[				
Christine Mathev	ws	]									
Cassie Brown							[				
Cale Kanack											1
Job steps <sup>(1)</sup> Tas	sk activity		Potential hazard(s	) <sup>(2)</sup>	Mi	tigating Measures			Person resp (Print first a names)		Verified by (Print first and last names)
1 Rev	view STAR and SW		Site personnel not STAR and SWA	aware of	•	<ul> <li>Project team (CRA) importance of and of for SWA during pre- Health and safety le commitment contrat</li> <li>Both the health personnel will s contract once revi Ensure that proper site including hard h boots, safety glasse gloves in accordance Guideline</li> <li>Note that the F out of the vehing</li> </ul>	document -job safety eader discu act with sin n and safe sign the co reviewed ard will be iewed PPE will b nad, safety s, and the e with the PPE should cle and at	ation procedures y meeting usses the COP te personnel ty leader and site ommitment signed by site e used while at the y vest, steel-toed prescribed work e Glove Selection I be worn when the site			

2	Opening bung on drums, or cap on buckets or totes	<ul> <li>Spills</li> <li>Splash</li> <li>skin absorption (dermal, eyes) during transfer</li> <li>Splash</li> <li>Spills</li> <li>Skin absorption</li> <li>Leaks</li> <li>Slips and trips</li> </ul>	<ul> <li>Use of proper tool(s)</li> <li>Remove bung/cap slowly</li> <li>Wear required PPE</li> <li>Clean residual chemical, if present, on drums</li> <li>Have 15-minute eyewash available onsite</li> <li>Inspect hose for integrity-do not use worn or leaking hose</li> <li>Lower hose or pump into drum or tote slowly</li> <li>Use proper housekeeping practices</li> <li>Hand protection required</li> </ul>
		<ul> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> </ul>	<ul> <li>Eye protection required</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> </ul>
4	Set up transfer pump or set up to pour by hand	<ul> <li>Mechanical failure</li> <li>Chemical exposure</li> <li>Electrical hazard</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> <li>Splash</li> </ul>	<ul> <li>Inspect pump prior to startup</li> <li>Inspect all mechanical/electrical connections, tighten accordingly</li> <li>Use GFCI if in wet environment</li> <li>Hand and eye protection required</li> <li>Follow manufacturer's specifications</li> <li>Refer to step 4 and HASP for lifting methods/information</li> <li>If pouring, assure opening is wide enough and container is positioned so material being poured will enter the opening. Use a large funnel or drum funnel if appropriate.</li> </ul>
5	Begin pumping – check for leaks	Mechanical failure	<ul> <li>Exercise SWA</li> <li>Disconnect electrical source to pump</li> <li>Refer to manufacturer's specifications for troubleshooting tips</li> <li>Wear proper PPE</li> <li>Remove any residual chemical leaks or spills from unit</li> <li>Always add acids or bases to water – FOLLOW THE ALPHABET</li> </ul>
6	Completion of chemical transfer via pump ops – turn pump off	<ul> <li>Spills</li> <li>Splash</li> <li>Slips and trips</li> </ul>	<ul> <li>Turn pump off</li> <li>Raise hose from transfer drum or tote</li> <li>Gravity drain out residual chemical from hose – use bucket if necessary</li> <li>Flush hoses and pumps</li> <li>Housekeeping practices - clean up residual leaks/spills from pump, containers, and floor – use drip pans as needed</li> <li>Wear proper PPE</li> </ul>

7	Removal of empty drums/tote	Pinch points	Use of spotter for truck operator, if applicable
		Strains	Reinstall lids/bungs/caps on empty containers
		<ul> <li>Property damage</li> </ul>	Use proper hand protection
			Secure load; use proper lifting techniques
			Label drums/tote appropriately
			DO NOT RINSE RETURNABLE CONTAINERS
8	Final inspection of work area	Leaks	Perform a 360-degree walk around
		Spills	Assure all tanks/containers are properly labeled
		• Fire	Correct any problems noted
		Punctures	•

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Name/Company	Sign	Date

<b>WYOU</b>	
	DPLE

SSE(s) on job:	Assigned mentor:
Presenter signature:	Date/time:
My signature below indicates that all conditions an met, and reviewed with all affected personnel prior	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone	e number):



### **Decontamination of Sampling Equipment and Personnel (PPE Level D)**

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM						
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No		
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105							
Specific Task	Decontamination of sampling equipment and per	Decontamination of sampling equipment and personnel (PPE Level D)							
Key equipment:	Alconox/Liquinox, brushes	Alconox/Liquinox, brushes							
Task-specific training:	Decontamination/Site Control; Quality Control/Sa	Decontamination/Site Control; Quality Control/Sampling Plan; 40-Hour HAZWOPER; P66 On-boarding							

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	⊠ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	Haz Cat 4	□ R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date	
Name	Signature	- Moamea by	Noviewed by	Date	
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					
David Bonga					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Decontamination of sampling equipment (including pumps, bailers, tubing, etc.)	<ul> <li>Contaminant exposure</li> <li>Pinch points</li> <li>Slip/trip/hit/fall hazards</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Set up decon station to capture any spills to avoid cross-contamination and manage wastes</li> <li>Wear medium duty gloves that meet the ANSI Cut and Abrasion Resistance Level 2 EN 388 3xx Testing Standard with nitrile gloves</li> <li>Scrub equipment clean then rinse and verify it is clean and free of contamination</li> <li>Avoid putting hands in or near pinch points</li> <li>Maintain good housekeeping and be aware of surroundings</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical means, such as a dolly, cart, or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Refer to the HASP for additional lifting techniques</li> </ul>		
2	Decontamination of personnel	<ul> <li>Contaminant exposure</li> <li>Slip/trip/hit/fall hazards</li> </ul>	<ul> <li>Refer to the HASP for specific procedures but in general start with most contaminated article and remove until inner gloves are the last item left</li> <li>Wear medium duty gloves that meet the ANSI Cut and Abrasion Resistance Level 2 EN 388 3xx Testing Standard with nitrile gloves</li> <li>Dispose of used PPE in accordance with site requirements</li> <li>Wash hands and face before eating, drinking, or using tobacco products</li> <li>Take care when removing PPE (boots, gloves, etc.); sit down to remove/change boots as necessary</li> </ul>		
3	Management of waste derived from decontamination activities	<ul> <li>Contaminant exposure</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Containerize decon waste (e.g., water, used PPE) as required</li> <li>Wear medium duty gloves that meet the ANSI Cut and Abrasion Resistance Level 2 EN 388 3xx Testing Standard with nitrile gloves</li> <li>Properly dispose of decon fluids (e.g., sediments)</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical means, such as a dolly, cart, or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Refer to the HASP for additional lifting techniques</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
4					
5					

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Name/Company	Sign	Date

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	MENT & P	EOPLE

Presenter signature:	Date/time:
My signature below indicates that all conditions and require met, and reviewed with all affected personnel prior to start of	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):

Assigned mentor: \_\_\_\_\_

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



### **Soil Sampling**

Date issued/revised:	7/23/2015	Client:	Phillips 66 RM						
Project Number:	075015	Created By	Cassie Brown	Sim OPS	Yes/No	SSE on site?	Yes/No		
Project Address:	6356 Desert Road, Albuquerque, NM	6356 Desert Road, Albuquerque, NM							
Specific Task	Drill Rig Oversight	Drill Rig Oversight							
Key equipment:	Drill Rig and Crew; PID with 11.7 eV Lamp for South/EDC Plume and PID with 10.6 eV Lamp for North/AVGAS Plume								
Task-specific training:	Facility Orientation, GHD Field Methods Training,								

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR Ves		PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🛛 Class E (standard)	Level 2 Light duty with protection	☐ Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	🗌 P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	□ R95		Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Devel	Project Development Team			_ Modified by		Reviewed by		Date	
Name		Signature		mouniou by				Buto	
Jeff Walker									
Christine Ma	athews	]						]	
Cassie Brow	vn							[ ]	
Cale Kanacl	k			[ ]					
Job steps <sup>(1)</sup>	Task activity		Potential hazard(s	\$) <sup>(2)</sup>	Mitigating Measures		Person responsible (Print first and last names)		Verified by (Print first and last names)
1	Discuss STAR and SWA Expe	,	Site personnel/ subco aware of STAR proces	1	documentation pro pre-job safety/tailg	cuss importance of and cedures for SWA during ate safety meeting to stop any work that is			

2	Markout underground utilities	<ul> <li>Property damage</li> <li>Explosion</li> <li>Electrocution</li> <li>Injury</li> <li>Death</li> </ul>	<ul> <li>Call public underground utility agency (NM811) at least 5 or more days prior to work activities</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Review state law pertaining to underground pipe line safety and have private utility mark-out performed</li> <li>Expose lines if warranted (i.e., hand dig, test pit, or daylight)</li> </ul>
3	Conduct site walk, identify unsafe conditions, and determine sample point locations	<ul> <li>Traffic</li> <li>Slip/trip/fall hazards</li> <li>Biological hazard</li> <li>Overhead/underground hazards</li> <li>Tip hazards due to slop angles</li> </ul>	<ul> <li>Maintain awareness of on-site traffic and walking surfaces</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>When selecting soil boring locations, be aware of biological hazards (e.g., ants, poison ivy, wasps) and overhead/underground hazards (e.g., overhead utilities, concrete scarring, station canopy)</li> <li>Adjust drilling locations to provide level surfaces for drilling</li> </ul>
5	Equipment inspection	<ul> <li>Pinch points</li> <li>Property damage</li> <li>Lost time due to damaged equipment/parts</li> </ul>	<ul> <li>Discuss pinch points on equipment (e.g., drill rig, air knife, pressure washer, etc.)</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Familiarize all personnel with location/operation of fire extinguisher(s) and kill switch on drill rig</li> <li>Visually inspect equipment/parts for damage and document inspections</li> </ul>
6	Set up work zone for drilling	<ul> <li>Traffic</li> <li>Slip/trip/fall hazards</li> <li>Property damage</li> <li>Overhead hazards</li> <li>Environmental impact</li> </ul>	<ul> <li>Maintain awareness of on-site traffic, work zones, walking surfaces, overhead hazards (e.g., canopy and low hanging overhead lines)</li> <li>Utilize barricades/cones/caution tape to define work zone and direct traffic</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Be aware of any potential sensitive receptors and verify all personnel are aware of the location of spill kit</li> </ul>

7	Set up staging area	<ul> <li>Traffic</li> <li>Slip/trip/fall hazards</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> <li>Pinch points</li> <li>Heat/cold stress</li> </ul>	<ul> <li>Maintain awareness of on-site traffic and walking surfaces</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Utilize barricades/cones/caution tape to define work zone and direct traffic</li> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Avoid placing hands/fingers in pinch point locations</li> <li>In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers)</li> </ul>
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8	Contractor oversight/ management of hole clearance/drilling activities	<ul> <li>Traffic</li> <li>Slip/trip/fall hazards</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Underground utilities</li> <li>Contaminant exposure</li> <li>Heat/cold stress</li> <li>Unstable ground conditions</li> </ul>	<ul> <li>Maintain awareness of on-site traffic and practice good house keeping</li> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Ensure subcontractors don proper PPE (e.g., face shield, leather/cotton gloves, hearing protection) and utilize proper lifting techniques</li> <li>If non-native material (e.g., pea gravel, sand, fill material) or underground utilities are observed, utilize SWA and assess situation</li> <li>Perform a prestart meeting, inform the subcontractor of safe lifting practices</li> <li>Refer to step 5 and the HASP for additional lifting information</li> <li>Monitor safe drill movement/positional setup</li> <li>Inspect soil for loose, soft or unstable conditions under rig jacks or outriggers</li> <li>Monitor breathing zone and refer to the HASP for action levels</li> <li>Monitor all personnel for signs and symptoms of heat/cold stress and refer to the HASP for recommendations</li> <li>Be aware of unsafe hoisting and material handling practices</li> <li>Be aware of proper augering and auger handling techniques</li> </ul>
	Site/boring security	<ul> <li>Traffic</li> <li>Slip/trip/fall hazards</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Wear cut, puncture and abrasion resistance level 2 or greater gloves at all times while onsite.</li> <li>Maintain awareness of on-site traffic and walking surfaces</li> <li>Maintain proper lifting techniques as described in steps 5 and 6.</li> <li>Ensure good housekeeping methods are practiced and work area is kept clean of debris</li> <li>Secure boring location if open overnight</li> </ul>

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

<b>YOU</b>	

Presenter signature:	Date/time:
My signature below indicates that all conditions and requirem met, and reviewed with all affected personnel prior to start of	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):

Assigned mentor: \_\_\_\_\_

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



### Insert Name: Driving

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM					
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105						
Specific Task	Travel to/from site with company/rental/personal	Travel to/from site with company/rental/personal vehicles without trailers or equipment						
Key equipment:	Vehicle, valid driver's license, 360-degree topper							
Task-specific training:	40-Hour HAZWOPER; P66 On-boarding; Defensive Dr	iving;						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	☐ Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	🗆 P100		Paper tyvek
☐ Industrial grade safety boot	☐ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	Haz Cat 4	🗌 R95		☐Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team Name Signature		Modified	i bv	Reviewed by	Date	
		mounicu by		i cononica by	Dato	
Justin Covey				Misti Thompson	03/13/2017	
Chrissi Ruby						

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup> Include energy sources from hazard wheel -	Corrective measure(s) <sup>(3)</sup>	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Discuss STAR and SWA	Site personnel not aware of STAR and SWA	<ul> <li>Project team (GHD) discusses importance of and documentation procedures for SWA during pre-job safety meeting</li> <li>Discuss route, concerns, and alternate routes with passenger and drivers of other vehicles</li> <li>Use SWA to stop any work that is unsafe</li> <li>Ensure proper vehicle selected for travel (use a truck if going to construction site or area with rough conditions that would damage a small vehicle?)</li> </ul>		
2	Check weather	<ul> <li>Unexpected storm</li> <li>Fog; rain; snow; lightening/thunder</li> <li>Heat/cold stress</li> </ul>	<ul> <li>Check local weather forecast</li> <li>Discuss weather issues and precautions to take while driving and on site during the pre-job safety meeting</li> <li>If weather conditions (e.g., fog, rain, snow, etc.) impair the ability/vision of the driver, exit at nearest safe location and assess the situation</li> <li>While on site, at first sign of lightening/thunder utilize SWA and assess weather conditions</li> <li>In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers)</li> </ul>		
3	Complete CRA Daily Operator Vehicle Checklist	<ul> <li>Damaged vehicle lights, tires, windows, mirrors, horn</li> <li>Inadequate vehicle documents and/or safety items</li> </ul>			
4	Check and adjust seat, steering wheel, headrest, and mirrors	<ul> <li>Back/body strain</li> <li>Blind spot</li> <li>Impaired vision</li> </ul>	<ul> <li>Adjust seat, headrest, and steering wheel height so body is fully supported/comfortable and pedals are within easy reach</li> <li>Ensure mirrors are properly adjusted</li> </ul>		
5	Fasten seat belt(s) and ensure passengers' seat belts are fastened	Serious injury, ejection, or death from collision and/or traffic citation	Verify driver and passenger(s) seat belts are in good condition and properly latched		
6	Ensure vehicle doors are locked	<ul> <li>Serious injury, ejection, or death from collision</li> <li>Unwanted intrusion</li> <li>Lost equipment</li> </ul>	Manually lock all doors to vehicle prior to starting the vehicle		
7	Start engine and check gauges and warning lights	Vehicle breakdown	• Verify sufficient fuel and other hazard lamps (e.g., battery, oil, and temperature) are not lit		

8	Driving – Use defensive driving techniques and stay alert	•	Arriving late Collision Blind spots of other vehicles Injury or death to occupants or other parties	•	Acknowledge and comply with all traffic regulations, laws, and ordinances Do not use two-way communicating devices or perform other distracting activities while vehicle is in motion Constantly scan intersections, move eyes, check mirrors, and assess traffic lights (fresh vs. stale) Recognize other vehicle's blind spots and minimize time spent within these zones Maintain safety cushion around vehicle (front, sides, and rear) and 4-second following distance (add an extra second for each hazardous condition, triple following distance in poor weather conditions) Signal well in advance before changing lanes or turning Utilize all driving defensive techniques	
9	Arrive at site	•	Pedestrian injury Collision	•	Maintain awareness of pedestrian/vehicular traffic when entering site and traveling to work zone	
10	Park vehicle – assign a spotter if necessary (when in doubt use a spotter)	•	Pedestrian injury Collision Property damage	•	Maintain awareness of pedestrian/vehicular traffic Park vehicle in pull-through parking space or facing the exit Parking in a parking space that is not a designated parking space will require the placement of the 360-degree topper on the hood of the vehicle Use caution and mirrors/spotter when backing vehicle Set parking brake	
11	Demobilization – conduct a vehicle walk-around inspection paying particular attention to path(s) of travel	•	Collision Injury or death to occupants or other parties	•	Perform perimeter vehicle check Maintain awareness of pedestrian/vehicular traffic when exiting site Utilize defensive driving techniques Complete post-departure checklist and report vehicle problems to company vehicle maintenance manager or rental car agency	
12	Report maintenance or mechanical problems upon returning vehicle	•	Conditions worsen leading to mechanical failure resulting in collision and injury	•	Report vehicle problems immediately to company representative or rental car agency Schedule and/or perform repairs as soon as possible	

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- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

I have participated in the review and discussion of the Job Safety Analysis (JSA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date



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SSE(s) on job:	Assigned mentor:
Presenter signature:	Date/time:
My signature below indicates that all conditions and require met, and reviewed with all affected personnel prior to star	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):
GHD emergency contact (Name and verified phone numb	per):

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### **Drum/Container Moving and Handling**

Date issued/revised:	10/22/2015	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Cale Kanack Sim OPS Yes/No SSE on site? Yes/No				
Project Address:	6356 Desert Road, Albuquerque, NM						
Specific Task	Moving and handling of drums or containers						
Key equipment:	Drum dolly, 15 minute eyewash						
Task-specific training:	40-Hour HAZWOPER or 8-Hour Refresher, HAZCOM, PPE, Hand and Power Tools, SLS, Any Site & Client Specific training per the HASP						

Hard Hat Gloves (ANSI/EN 388)		Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)		ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🛛 Class E (standard)	Level 2 Light duty with protection	Face shield			Anti-Static	High viz clothing
Class G	☐ Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			🗌 N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	🗌 P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
☐ Rubber boots (industrial grade)	ANSI Cut and Abrasion Resistance Level 3 EN 388 4522 gloves	Required	Haz Cat 4	🗌 R95		☐Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team			Modified I		Reviewed by		Date	
Name Signature		Mounisui	<i>,</i> <b>, , , , , , , , , ,</b>					
Jeff Walker		[	[					
Christine Mat	thews							
Cassie Brow	n						[	
Cale Kanack								
Job steps <sup>(1)</sup>	Task activity	Potent	ial hazard(s) <sup>(2)</sup>	Mitigating Measures		Person resp (Print first a names)		Verified by (Print first and last names)
1	Review STAR and SV	VA Site per STAR a	rsonnel not aware of and SWA ∣	<ul> <li>importance of and for SWA during pre-</li> <li>Health and safety commitment contri-</li> <li>Both the heal personnel will contract once</li> <li>The commitment of personnel once rev</li> <li>Ensure that proper site including hard boots, safety glass gloves in accordan Guideline</li> <li>Note that the out of the veh</li> </ul>	ard will be signed by site			

2	Offloading filled drums/containers from transportation vehicle	<ul> <li>Chemical exposure</li> <li>Pinch points</li> <li>Hand injury</li> <li>Spills, leaks</li> <li>Drums, pails, or bags falling off pallet</li> </ul>	<ul> <li>Reduce risk of exposure by wearing proper PPE when handling liquid filled drums(i.e., safety glasses, steel toe boots, gloves, etc)</li> <li>Natural Rubber (or other appropriate for Sodium Hydroxide, BioSolve, and Klozur SP ISCO materials) gloves over impact &amp; cut resistant gloves to protect from chemical and cut exposures. ANSI Cut and Abrasion Resistance Level 3 EN 388 4522 gloves</li> <li>Be sure drums are properly centered and stable on pallet.</li> <li>Move pallet using proper tools</li> <li>Be aware of possiblility of containers falling or moving. Crush injury or pinch/hand injuries</li> </ul>
3	Moving filled containers to designated area	<ul> <li>Pinch points</li> <li>Hand injury</li> <li>Slip/trip/fall hazards</li> <li>Lifting hazards</li> <li>Manual material handling</li> <li>Back injury</li> <li>Chemical Exposure</li> </ul>	<ul> <li>Instruct backgroup of private injuries</li> <li>Ensure that containers are sealed properly before maneuvering</li> <li>Reduce travel distance when there is a need to carry/lift materials.</li> <li>Make sure grip is adequate; Natural Rubber (or other appriate for Sodium Hydroxide, BioSolve, and Klozur SP ISCO materials) gloves over impact &amp; cut resistant gloves to protect from chemical and cut exposures. ANSI Cut and Abrasion Resistance Level 3 EN 388 4522 gloves</li> <li>Use moving/lifting device (drum dolly) to move 55-gallon drums; if an object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Should the drums be excessively heavy, personnel may need to consider alternative lifting/moving device</li> <li>Ensure that drum is fastened to drum dolly prior to moving drum</li> <li>Remove trip hazards in the area around the drums before moving</li> </ul>

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- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

JHA | Drum/Container Moving and Handling | 10/22/2015 | P66 | Page 3 of 5

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

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2	M	E
S	AENT & PE	EOPLE

Presenter signature:	_ Date/time:
My signature below indicates that all conditions and requiren met, and reviewed with all affected personnel prior to start of	
Supervisor Signature:	Date/time:

Assigned mentor:

Location of mustering point:	Wind direction (current):

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



# **Job Hazard Analysis (JHA)**

## **Enhanced Fluid Recovery**

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 87105						
Specific Task	Enhanced Fluid Recovery (EFR)						
Key equipment:	Oil/water interface probe, hand tools, vapor knockout tank, photoionization detector; safety cones/barricades						
Task-specific training:	Electrical Safety (if using pump); Vapor Sampling Procedures; reference HASP for additional site/client safety training requirements						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
⊠ Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	⊠ Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	Haz Cat 4	□ R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date
Name	Signature	mouned by	Neviewed by	Date
Justin Covey			Misti Thompson	03/13/2017
Chrissi Ruby				
Justin Nixon				

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Inspect/calibrate sampling equipment	Loss due to malfunctioning     equipment	Check all equipment to ensure it is in proper working order and has been calibrated to CRA and manufacturer's standards, then document		
2	Establish work zone at monitoring well location	<ul> <li>Traffic</li> <li>Pinch points</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Maintain awareness of on-site traffic patterns and walking paths</li> <li>Set up barricades</li> <li>Use work gloves and be aware of hand placement</li> <li>Use gloves to assist with grip</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> </ul>		
3	Open monitoring well cover(s)	<ul> <li>Pinch points</li> <li>Hand injury</li> <li>Biological hazards</li> </ul>	<ul> <li>Avoid placing hands in pinch points</li> <li>Wear proper PPE (gloves) for task and use the proper tool(s) when opening well covers (open face wrench/socket wrench)</li> <li>Inspect for other hazards that may affect the hands (hypodermic needles, etc.)</li> <li>Heightened awareness of wasps, ants, bees, spiders, and poison plants</li> </ul>		
4	Measure water levels	<ul> <li>Contaminant exposure</li> <li>Cross contamination</li> </ul>	<ul> <li>Wear proper PPE (Ndex nitrile gloves)</li> <li>Use PID to monitor air quality</li> <li>Decon probe and measuring tape following gauging of well</li> </ul>		
5	Set up drop tube in extraction wells and attach drop tube to 2-inch tubing that connects to vapor knock out tank	<ul> <li>Slip/trip/fall hazards</li> <li>Cuts</li> <li>Pinch points</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Maintain housekeeping; be aware of ground conditions</li> <li>Use PPE and proper tools</li> <li>Keep hands away from pinch points</li> <li>Inspect wiring, clamps, cables, etc.; avoid arcing</li> <li>Stretch affected muscles (triceps, back, neck, and shoulder) prior to/during/after activity; avoid repetitive motions and overhead lifts</li> <li>Refer to step 2 and the HASP for additional lifting information</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
6	Begin extracting fluid and vapors from extraction wells	<ul> <li>Electrical (AC or DC</li> <li>Slip/trip/fall hazards</li> </ul>	<ul> <li>Ensure vacuum truck is grounded</li> <li>Maintain awareness of on-site traffic patterns and walking paths</li> <li>Set up barricades</li> <li>Use work gloves when setting up barricades and be aware of hand placement</li> </ul>		
7	Collect vapor sample utilizing sample pump and Tedlar bag	<ul> <li>Chemical exposure</li> <li>Sample misidentification</li> <li>Electrical (AC or DC)</li> </ul>	<ul> <li>Wear proper PPE</li> <li>Inspect all extension cords</li> <li>Do not over fill Tedlar bags</li> <li>Ensure sample ID numbers match sample location/site plan</li> <li>Check sample labels for accuracy prior to placing in container</li> </ul>		
8	Monitoring vacuum readings at designated monitoring wells	<ul> <li>Traffic</li> <li>Hand injury</li> <li>Pinch points</li> </ul>	<ul> <li>Maintain awareness of on-site traffic patterns and verify barricades are still in place</li> <li>Wear appropriate gloves and use proper tool(s)</li> <li>Avoid placing hands in pinch points</li> </ul>		
9	Pack samples in container	<ul> <li>Tedlar breakage</li> <li>Chemical exposure</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Lost time due to sampling error</li> </ul>	<ul> <li>Pack Tedlar in bubble wrap or equivalent protection</li> <li>Wear appropriate PPE (Ndex nitrile gloves)</li> <li>Refer to step 2 and the HASP for additional lifting information</li> <li>Ensure samples are packed/labeled/shipped correctly – double check</li> </ul>		
10	Manage any investigative derived waste (IDW)	<ul> <li>Chemical exposure</li> <li>Pinch points</li> <li>Slip/trip/fall hazards</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Mislabeling waste</li> </ul>	<ul> <li>Wear appropriate PPE (Ndex gloves) and work gloves</li> <li>Avoid pinch points</li> <li>Use proper PPE</li> <li>Inspect for proper housekeeping; clean up work area</li> <li>Refer to step 2 and the HASP for additional lifting information</li> <li>Label IDW appropriately (generator, contact number, identification of contents, and site location); specify type of contents; arrange for disposal</li> </ul>		

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- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

<b>HYOU</b>	
<b>OGHD</b>	

Presenter signature:	_ Date/time:
My signature below indicates that all conditions and requirer met, and reviewed with all affected personnel prior to start o	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):

Assigned mentor: \_\_\_\_\_

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



# **Job Hazard Analysis (JHA)**

## Fluid Level Monitoring

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM					
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105						
Specific Task	Fluid level monitoring (collecting water/LNAPL le	Fluid level monitoring (collecting water/LNAPL levels/gauging wells)						
Key equipment:	Water level meter or oil/water interface meter, PID, PPE							
Task-specific training:	40-Hour HAZWOPER; P66 On-boarding; Defensive Driving; Fluid Level Monitoring							

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
🛛 Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	☐ Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	Haz Cat 4	□ R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date	
Name	Signature	mounied by	Noviewed by	Date	
Justin Covey			Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Inspect/calibrate equipment	Loss due to malfunctioning     equipment	Check all equipment to ensure it is in proper working order and has been calibrated to CRA and manufacturer's standards, then document		
2	Establish work zone at monitoring well location	<ul> <li>Traffic</li> <li>Pinch points</li> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> </ul>	<ul> <li>Review work zone controls using the STAR process; is it safe to proceed?</li> <li>Wear medium duty gloves that meet the ANSI Cut and Abrasion Resistance Level 2 EN 388 3xx Testing Standard</li> <li>Maintain awareness of on-site traffic patterns and walking paths</li> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> </ul>		
3	Open monitoring well cover(s)	<ul> <li>Pinch points</li> <li>Hand injury</li> <li>Biological hazards</li> </ul>	<ul> <li>Avoid placing hands in pinch points</li> <li>Avoid placing hands in pinch points</li> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Use the proper tool when opening well covers (open face wrench/socket wrench)</li> <li>Maintain good housekeeping; stow bolts, locks, wrench, plug, etc. in a safe area to prevent loss</li> <li>Inspect for other hazards that may affect the hands (hypodermic needles, etc.)</li> <li>Use PID to monitor air quality in breathing space</li> <li>Heightened awareness of wasps, ants, bees, spiders, and poison plants</li> </ul>		
4	Measure water/LNAPL levels	<ul> <li>Contaminant exposure</li> <li>Cross contamination</li> </ul>	<ul> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Use PID to monitor air quality in breathing space</li> <li>Decon probe and measuring tape following gauging of well</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
5	Close monitoring well cover	<ul> <li>Traffic</li> <li>Hand injury</li> <li>Pinch points</li> </ul>	<ul> <li>Maintain awareness of on-site traffic patterns; verify barricades are still in place</li> <li>Wear Ndex nitrile gloves over top of a glove approved by the ANSI Cut and Abrasion Resistance Level 2 EN 388 21xx Testing Standard</li> <li>Avoid placing hands in pinch points</li> </ul>		

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- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date		

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Presenter signature:	_ Date/time:					
My signature below indicates that all conditions and requirements listed above have been verified, met, and reviewed with all affected personnel prior to start of work.						
Supervisor Signature:	Date/time:					

Assigned mentor:

Location of mustering point:	Wind direction (current):
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GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



# **Job Hazard Analysis (JHA)**

### Insert Name: Site Recon and Walkthrough

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM				
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105					
Specific Task	Site Recon and Walkthrough						
Key equipment:	Basic PPE, hand/power tools based on site condition, site inspection checklist or notebook, JSA forms, pens						
Task-specific training:	SMART Safety training (STAR), JHA development, Poison Plant Identification						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	Coveralls
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
🛛 Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	🗌 R95		□Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team		Modified by	Reviewed by	Date		
Name		Signature	mounied by		Date	
Justin	Covey			Misti Thompson	03/13/2017	
Chriss	si Ruby					
Justin	Nixon					

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Discuss STAR and SWA	Site personnel not aware of STAR and SWA	<ul> <li>Project team (GHD) discusses importance of and documentation procedures for SWA during pre job safety meeting</li> <li>Use SWA to stop any work that is unsafe</li> </ul>		
2	Check weather	<ul> <li>Unexpected storm, fog; rain; snow; lightening, thunder</li> <li>Heat/cold stress</li> </ul>	<ul> <li>Check local weather forecast</li> <li>Discuss weather issues and precautions to take while driving and on site during the pre job safety meeting</li> <li>If weather conditions (e.g., fog, rain, snow) impair the ability/vision of the driver, exit at nearest safe location and assess the situation</li> <li>While on site, at first sign of lightning/thunder utilize SWA and assess weather conditions</li> <li>In extreme temperatures, ensure all personnel have proper clothing, hydration, and heat/cold protection (e.g., canopy, fan, glove warmers)</li> </ul>		
3	• Sign in	Site Manager and Operator not aware of GHD staff presence in facility or on grounds	<ul> <li>Sign in at front desk</li> <li>Ask to speak to Site Manager or alternate designate</li> </ul>		
4	Don necessary GHDand client required     PPE	Contact with recyclable material or equipment	• Wear all required PPE (hard hat, vest, boots, and glasses) at all times while in the facility		

5	Unload equipment from vehicle	<ul> <li>Lifting hazards</li> <li>Back injury</li> <li>Manual material handling</li> <li>Cuts</li> <li>Pinch points</li> <li>Hand/foot injury</li> <li>Forgotten equipment</li> <li>Damaged equipment</li> </ul>	<ul> <li>Reduce travel distance when there is a need to carry/lift materials</li> <li>Make sure grip is adequate; wear leather/cotton gloves</li> <li>Size up the load; if the object is too large or odd shaped OR is in excess of 50 pounds (23 kg) then assistance (mechanical or a buddy lift) will be required</li> <li>Lift with the legs (bend at the knees and use the leg muscles) to protect the lower back and keep lower back in a neutral position</li> <li>Avoid one-handed carrying if possible; maintain awareness of footing</li> <li>Wear leather/cotton gloves and avoid placing hands/fingers in pinch point locations</li> <li>Wear steel-toed boots</li> <li>Verify requested equipment against warehouse form</li> <li>Load equipment in an organized manner to prevent shifting during transport or use cargo netting</li> </ul>
6	<ul> <li>Complete site inspection and walkover of the property and work areas – Note any hazards that will impact site personnel and/or their operations</li> </ul>	<ul> <li>Slip/trip/fall hazards</li> <li>Insects/reptiles</li> <li>Pedestrian injury</li> <li>Poison plants</li> </ul>	<ul> <li>Check in with site personnel and sign appropriate visitor or safety log (may require watching safety video [i.e., plant])</li> <li>Check with site contact to determine safely accessible areas and areas where PPE are required</li> <li>Wear PPE as directed by site personnel or dependent upon your evaluation of conditions</li> <li>If building(s) looks dilapidated or in poor condition, do not enter</li> <li>Watch for vehicles or other mobile equipment moving around</li> <li>Make sure areas are well lit and you are accompanied by a site representative (if applicable)</li> <li>Watch where you step on pavement (potholes, dips, or obstructions) and in vegetated/wooded areas (dips, holes, branches, vines, etc.)</li> <li>Do not take photographs while walking</li> <li>If in vegetated or wooded areas, watch for beehives, wear insect repellent (if area and season dictate) as needed, be mindful of gopher holes/tunnels, small animal dens, snakes, stray dogs/cats, transient/homeless individuals, poison ivy/oak/sumac, etc.</li> </ul>

7	Sign out	Site Manager and Operator not aware that CRA staff have left facility	<ul> <li>Sign out at front desk</li> <li>Ask to speak to Site Manager or alternate designate</li> </ul>
8	Demobilization	<ul> <li>Collision</li> <li>Injury or death to vehicle occupants or other parties</li> </ul>	<ul> <li>Perform perimeter vehicle check</li> <li>Maintain awareness of pedestrian/vehicular traffic when exiting the site</li> <li>Utilize defensive driving techniques</li> <li>Complete post-departure checklist and report vehicle problems to company vehicle maintenance manager or rental car agency</li> </ul>

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Name/Company	Sign	Date		

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Presenter signature:	_ Date/time:
My signature below indicates that all conditions and requiren met, and reviewed with all affected personnel prior to start of	

Assigned mentor: \_\_\_\_\_

Location of mustering point:	Wind direction (current):
- · · · · · · · · · · · · · · · · · · ·	

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_



# **Job Hazard Analysis (JHA)**

### **Mobilization/Demobilization**

Field staff must review job specific work plan and coordinate with project manager to verify that all up front logistics are completed prior to starting work including, but not limited to, permitting, access agreements, and notification to required contacts (e.g., site managers, inspectors, clients, subcontractors, etc.). Additionally, a tailgate safety meeting must be performed and documented at the beginning of each workday. Stop, Think, Act, Review (STAR) must be used prior to any activity. All personnel must possess the appropriate training prior to initiating scheduled tasks. Also consider weather conditions. GHD personnel have the authority and responsibility to use Stop Work Authority (SWA). Review this JHA initially and in the field prior to initiating the job, using the P66 RM "Go Card" to assist in identifying specific site hazards. Document by "dirtying" this JHA.

Date issued/revised:	3/14/2017	Client:	Phillips 66 RM					
Project Number:	075015	Created By	Justin Covey	Sim OPS	Yes/No	SSE on site?	Yes/No	
Project Address:	6356 Desert Road, Albuquerque, New Mexico, 8	6356 Desert Road, Albuquerque, New Mexico, 87105						
Specific Task	Enter site to retrieve field data	Enter site to retrieve field data						
Key equipment:	Vehicle, 360-degree roof topper, valid driver's license							
Task-specific training:	40-Hour HAZWOPER; P66 On-boarding; Defensive Dr	D-Hour HAZWOPER; P66 On-boarding; Defensive Driving; Fluid Level Monitoring						

Hard Hat	Gloves (ANSI/EN 388)	Eye protections	Fall protection	APR	Vest	PPE clothing
Type I (Top Impact)	Chemical Protective (i.e. Nitrile)	ANSI/CSA safety glasses	Harness	Full Face Mask	Class II	
Type II (Side Impact)	Level 1 Light duty	Goggles/spoggles	Shock absorb lanyard	Half Face Mask	Class III	Fire retardant clothing (FRC)
Class E (standard)	Level 2 Light duty with protection	Face shield	Lifeline		Anti-Static	High viz clothing
🗌 Class G	Level 3 Medium duty	Other*		Cartridges	☐ FRC	Long pants
	Level 4 Heavy duty			□ N95		Long sleeve shirts
Foot Protection	High viz	Hearing protection	Arc flash	□ P100		Paper tyvek
Industrial grade safety boot	Other*	NOT Required	Haz.Cat 2	☐ P95		Polyethyene tyvek
Rubber boots (industrial grade)		Required	🗌 Haz Cat 4	□ R95		⊠Other *
Hip waders				Organic vapor		
	*see key equipment			Specialty/other*		

Project Development Team           Name         Signature		Modified by	Reviewed by	Date	
		mounied by	Noviewed by		
Justin Covey		Justin Covey	Misti Thompson	03/13/2017	
Chrissi Ruby					
Justin Nixon	]				

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
1	Review STAR and SWA	Site personnel not aware of STAR and SWA	<ul> <li>Project team (CRA) discusses and reviews the importance of and documentation procedures for SWA during pre-job safety meeting</li> <li>Health and safety leader discusses the COP commitment contract with site personnel         <ul> <li>Both the health and safety leader and site personnel will sign the commitment contract once reviewed</li> </ul> </li> <li>The commitment card will be signed by site personnel once reviewed</li> <li>Ensure that proper PPE will be used while at the site including hard had, safety vest, steel-toed boots, safety glasses, and the prescribed work gloves in accordance with the Glove Selection Guideline         <ul> <li>Note that the PPE should be worn when out of the vehicle and at the site</li> <li>Use SWA to stop any work that is unsafe</li> </ul> </li> </ul>		
2	Check weather	<ul> <li>Unexpected storm</li> <li>Fog, rain, snow; lightening/thunder</li> <li>Heat/cold stress</li> </ul>	<ul> <li>Check local weather forecast</li> <li>If adverse weather conditions are likely, prepare a contingency plan for lodging, etc. with project manager</li> <li>Discuss weather issues and precautions to take while driving</li> <li>If weather conditions (e.g., fog, rain, snow) impair the ability/vision of the driver, exit at nearest safe location and assess the situation</li> <li>While on site, at first sign of lightening/thunder utilize SWA and assess weather conditions</li> </ul>		
3	Complete CRA Daily Operator Vehicle Checklist	<ul> <li>Damaged vehicle lights, tires, windows, mirrors, horn</li> <li>Inadequate vehicle documents and/or safety items</li> </ul>	<ul> <li>Check for fluid leaks under vehicle</li> <li>Test operation of headlights, front/rear turn signals, backup lights, brake lights, and emergency flashers</li> <li>Visually check the pressure/wear of tires</li> <li>Ensure the vehicle has a spare tire</li> <li>Assure windshield and window glass is clean and free from obstructions</li> <li>Test the windshield wipers and horn</li> <li>Verify vehicle registration, insurance card, and inspection sticker is present and valid</li> <li>Ensure the vehicle contains a first aid kit, fire extinguisher, and road hazard kit</li> <li>Check immediate vehicle perimeter and initial path of travel for obstructions</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
4	Check and adjust seat, steering wheel, headrest, and mirrors	<ul> <li>Back/body strain</li> <li>Blind spot</li> <li>Impaired vision</li> </ul>	<ul> <li>Adjust seat, headrest, and steering wheel height so body is fully supported/comfortable and pedals are within easy reach</li> <li>Ensure mirrors are properly adjusted</li> </ul>		
5	Fasten seat belt(s) and ensure passenger(s) seat belts are fastened	Serious injury, ejection, or death from collision and/or traffic citation	<ul> <li>Verify driver and passenger(s) seat belts are in good condition and properly latched</li> </ul>		
6	Ensure vehicle doors are locked	<ul> <li>Serious injury, ejection, or death from collision</li> <li>Unwanted intrusion</li> <li>Lost equipment</li> </ul>	Manually lock all doors to vehicle		
7	Start engine and check gauges and warning lights	Vehicle breakdown	<ul> <li>Verify sufficient fuel and other hazard lamps (e.g., battery, oil, and temperature) are not lit</li> </ul>		
8	Mobilize to site	<ul> <li>Collision</li> <li>Injury or death to occupants or other parties</li> </ul>	<ul> <li>Do not use cell phones or perform other distracting activities while vehicle is in motion</li> <li>Constantly scan intersections, move eyes, check mirrors, and assess traffic lights (fresh vs. stale)</li> <li>Maintain safety cushion around vehicle (front, sides, and rear) and 4-second following distance</li> <li>Utilize all driving defensive techniques</li> </ul>		
9	Park vehicle/arrive at site	<ul> <li>Pedestrian injury</li> <li>Collision</li> <li>Property damage</li> </ul>	<ul> <li>Maintain awareness of pedestrian/vehicular traffic when entering site and traveling to work zone</li> <li>Follow site speed limits</li> <li>Ensure that Kinder Morgan procedures are followed while on site including:         <ul> <li>No cell phone usage when on site except in vehicle or inside building</li> <li>Must be parked in a pull through parking space or facing the exit</li> <li>Must sign in at the guardhouse before entering site.</li> <li>All personnel must have TWIC cards</li> </ul> </li> </ul>		
10	Unlocking gate and entering Site	<ul> <li>Pedestrian injury</li> <li>Slip/trip/fall hazards</li> </ul>	<ul> <li>Ensure proper PPE is worn (in accordance with step 1)</li> <li>Check immediate vehicle perimeter and initial path of travel for obstructions</li> <li>Maintain awareness of pedestrian/vehicular traffic when entering the site</li> <li>Ensure that stairways are cleared before entering trailer to retrieve field notes</li> </ul>		

Job steps <sup>(1)</sup>	Task activity	Potential hazard(s) <sup>(2)</sup>	Mitigating Measures	Person responsible (Print first and last names)	Verified by (Print first and last names)
11	Demobilization	<ul><li>Pedestrian injury</li><li>Slip/trip/fall hazards</li></ul>	<ul> <li>Ensure gates are locked and secure</li> <li>Pull through parking space to exit site</li> <li>Follow site speed limits</li> </ul>		

(1) Each Job or Task consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the potential (associated) hazards.

- (2) A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: Contact victim is struck by or strikes an object; Caught victim is caught on, caught in or caught between objects; Fall victim falls to ground or lower level (includes slips and trips); Exertion excessive strain or stress/ergonomics/lifting techniques; Exposure inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".
- (3) Aligning with the Job Steps, Task Activity Description, and Potential Hazard columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable, and quantified terms. Avoid subjective general statements such as "be careful" or "use as appropriate".

I have participated in the review and discussion of the Job Hazard Analysis (JHA) listed on this document and understand the duties I am responsible to fulfill. As part of my work, I know I have the responsibility and obligation to STOP work with a **Stop Work Authority (SWA)** if conditions change and/or potential hazards have been identified.

Name/Company	Sign	Date

μY	0	U
Z.	M	E
	<b>J</b> H	EOPLE

Presenter signature:	_ Date/time:
My signature below indicates that all conditions and requirem met, and reviewed with all affected personnel prior to start of	
Supervisor Signature:	Date/time:
Location of mustering point:	Wind direction (current):

Assigned mentor: \_\_\_\_\_

GHD emergency contact (Name and verified phone number):

SSE(s) on job: \_\_\_\_\_

Appendix C Safety Data Sheets



Safety Data Sheet PTG-4032 according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 05/25/2015 Version: 1.0

SECTION: 1. Product and company i	dentification
1.1. Product identifier	
Product form	: Mixture
Formula	<ul> <li>Non-flammable, Non-oxidizing gas mixture containing one or more of the following components: Hexane, Heptane, Isobutene, Oxygen, Nitrogen.</li> </ul>
1.2. Relevant identified uses of the subs	tance or mixture and uses advised against
Use of the substance/mixture	: Calibration / Reference
Use of the substance/mixture	: Industrial use. Use as directed.
1.3. Details of the supplier of the safety	data sheet
	Manufactured for:By:Industrial Scientific CorporationPortaGas(Praxair, Inc)1 Life Way1202 E Sam Houston Pkwy SPittsburgh, PA 15205-7500 - USAPasadena, TX 77503USA Phone: 412-788-43531-800-DETECTS (338-3287)Fax: 412-788-8353www.indsci.com
<b>1.4.</b> Emergency telephone number	
Emergency number	: Onsite Emergencies: 1-800-645-4633 CHEMTREC: USA 1-800-424-9300, International 001-703-527-3887 (Collect calls accepted, contract 17729)
SECTION 2: Hazards identification	
2.1. Classification of the substance or m	ixture
Compressed gas H280	
2.2. Label elements	
GHS-US labeling	
Hazard pictograms (GHS-US)	GHS04
Signal word (GHS-US)	: WARNING
Hazard statements (GHS-US) Precautionary statements (GHS-US)	<ul> <li>H280 - CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED</li> <li>P410+P403 - Protect from sunlight when ambient temperature exceeds 52°C (125°F). Use and store only outdoors or in a well-ventilated place.</li> <li>CGA-PG27 - Read and follow the Safety Data Sheet (SDS) before use.</li> <li>CGA-PG21 - Open valve slowly.</li> <li>CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).</li> <li>CGA-PG05 - Use a back flow preventive device in the piping.</li> <li>CGA-PG06 - Close valve after each use and when empty.</li> <li>CGA-PG10 - Use only with equipment rated for cylinder pressure.</li> <li>CGA-PG11 - Never put cylinders into unventilated areas of passenger vehicles.</li> <li>CGA-PG12 - Do not open valve until connected to equipment prepared for use.</li> </ul>
2.3. Other hazards	
	No additional information available
2.4. Unknown acute toxicity (GHS-US)	No data available
EN (English US)	SDS ID: PTG-4032 1/10
	ישו טעט. ד ו ט <del>ייי</del> טטע. ד ו טייטט. ד ו טייטטע און איייטע און איייטע און איייטע און איייטע און איייטע און איייטע און



### Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 05/25/2015 Version: 1.0

	Date of iss	ue: 05/25/	2015 Version: 1.0		
SECT	ON 3: Composition/information	on ingr	edients		
3.1.	Substance				
		Not appl	icable		
3.2.	Mixture				
Name		F	Product identifier	%	
Nitroge	n		CAS No) 7727-37-9	79.1 - 99.999	
Oxyger			CAS No) 7782-44-7	0.0001 - 20.9	
Isobuty	ene	(0	CAS No) 115-11-7	0.0001 - 1	
n-Hexa	ne	(0	CAS No) 110-54-3	0.0001 <b>-</b> 0.9999	
n-Hepta	ane	(0	CAS No) 142-82-5	0.0001 - 0.6	
SECT	ON 4: First aid measures				
4.1.	Description of first aid measures				
First-aid	measures after inhalation :	victim wa Immedia difficult,	victim to uncontaminated area wearir arm and rested. Call a doctor. Apply a itely remove to fresh air. If not breathi qualified personnel may give oxygen.	rtificial respiration if l ng, give artificial res Call a physician.	preathing stopped.
First-aid	measures after skin contact	Adverse	effects not expected from this produc	t.	
First-aid	measures after eye contact :	Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an ophthalmologist immediately.			
First-aid	measures after ingestion :	Ingestion	n is not considered a potential route of	exposure.	
4.2.	Most important symptoms and effects	, both acı	ute and delayed		
		No addit	ional information available		
4,3.	Indication of any immediate medical a	ttention a	nd special treatment needed		
	nedical assistance.				
SECT	ON 5: Firefighting measures				
5.1.	Extinguishing media				
		Lleo ovti	nguishing media appropriate for surro	unding fire	
				unung me.	
5.2.	Special hazards arising from the subs				
Reactivi	ty :	No react	ivity hazard other than the effects des	cribed in sub-sectior	is below.
5.3.	Advice for firefighters				
-		and prot flow of g safe to d comply v L—Fire l	e all personnel from the danger area. ective clothing. Immediately cool con as if safe to do so, while continuing co lo so. Remove containers from area o with OSHA 29 CFR 1910.156 and app Protection. d protective clothing and equipment (S	tainers with water fro ooling water spray. F f fire if safe to do so. licable standards un	m maximum distance. Stop Remove ignition sources if On-site fire brigades must der 29 CFR 1910 Subpart
		fighters.			
SECT	ON 6: Accidental release measu	ires			
6.1.	Personal precautions, protective equi	pment an	d emergency procedures		
6.1.1.	For non-emergency personnel	No addit	ional information available		
6.1.2.	For emergency responders	No addit	ional information available		
6.2.	Environmental precautions				
		and wate	op release. Prevent waste from contai er pollution. Dispose of contents/conta ional/national/international regulations	ainer in accordance v	vith

EN (English US)

**INDUSTRIAL** SCIENTIFIC

# **PTG-4032**

Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Version: 1.0

Date of issue: 05/25/2015

6.3.	Methods and material for containmer	nt and cleaning up
		No additional information available
6.4.	Reference to other sections	
		See also sections 8 and 13.
SECT	ION 7: Handling and storage	
7.1.	Precautions for safe handling	
Precaut	ions for safe handling	: Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.
7.2.	Conditions for safe storage, including	g any incompatibilities
Storage	conditions	<ul> <li>Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.</li> <li>OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to</li> </ul>
		be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.
7.3.	Specific end use(s)	
		None.

### SECTION 8: Exposure controls/personal protection

#### 8.1. **Control parameters**

n-Hexane (110-54-3)				
ACGIH	ACGIH TLV-TWA (ppm)	ACGIH TLV-TWA (ppm) 50 ppm		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	1800 mg/m³		
USA OSHA	OSHA PEL (TWA) (ppm)	500 ppm		
n-Heptane (142-82-5)				
ACGIH	ACGIH TLV-TWA (ppm)	400 ppm		
ACGIH	ACGIH TLV-STEL (ppm)	500 ppm		
USA OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	OSHA PEL (TWA) (mg/m <sup>3</sup> ) 2000 mg/m <sup>3</sup>		
USA OSHA	OSHA PEL (TWA) (ppm)	OSHA PEL (TWA) (ppm) 500 ppm		
Isobutylene (115-11-7	7)			
ACGIH	ACGIH TLV-TWA (ppm)	250 ppm		
Nitrogen (7727-37-9)				
ACGIH	Not established			
USA OSHA	Not established			

EN (English US)

SDS ID: PTG-4032



Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 05/25/2015 Version: 1.0

Oxygen (7782-44-7)		
ACGIH	Not established	
USA OSHA	Not established	
8.2. Exposure controls		
Appropriate engineering controls	; :	Provide adequate general and local exhaust ventilation. Alarm detectors should be used when toxic gases may be released. Product to be handled in a closed system. Ensure exposure is below occupational exposure limits (where available).
Personal protective equipment	:	Gloves. Safety glasses.
Eye protection	:	Wear safety glasses when handling cylinders; vapor-proof goggles and a face shield during cylinder changeout or whenever contact with product is possible. Select eye protection in accordance with OSHA 29 CFR 1910.133.
Skin and body protection	:	Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible. Select per OSHA 29 CFR 1910.132, 1910.136, and 1910.138.
Respiratory protection	:	When workplace conditions warrant respirator use, follow a respiratory protection program that meets OSHA 29 CFR 1910.134, ANSI Z88.2, or MSHA 30 CFR 72.710 (where applicable). Use an air-supplied or air-purifying cartridge if the action level is exceeded. Ensure that the respirator has the appropriate protection factor for the exposure level. If cartridge type respirators are used, the cartridge must be appropriate for the chemical exposure (e.g., an organic vapor cartridge). For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).
Thermal hazard protection	:	Wear cold insulating gloves when transfilling or breaking transfer connections.
SECTION 9: Physical an	d chemical pro	nerties
9.1. Information on basic	-	
Physical state		Gas

9.1. Information on basic physical and	I chemical properties
Physical state	: Gas
Color	: Colorless
Odor	: No data available
Odor threshold	: No data available
pH	: Not applicable.
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable.
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor pressure	: Not applicable.
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Water: No data available
Log Pow	: Not applicable.
Log Kow	: Not applicable.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.

EN (English US)

SDS ID: PTG-4032



Safety Data Sheet PTG-4032

sc	IENTIFIC	Safety Data Sheet P1G-4032 according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 05/25/2015 Version: 1.0
Explosi	ive properties	: Not applicable.
Oxidizir	ng properties	: None.
Explosi	ion limits	: No data available
9.2.	Other information	
5121	other monitation	No additional information available
SECT	ION 10: Stability and re	eactivity
10.1.	Reactivity	
		No reactivity hazard other than the effects described in sub-sections below.
10.2.	Chemical stability	
10.2.	Chemical stability	Stable under normal conditions
		Stable under normal conditions.
10.3.	Possibility of hazardous r	eactions
		No additional information available
10.4.	Conditions to avoid	
		No additional information available
10 5	Incompatible motoriale	
10.5.	Incompatible materials	Na additional information quailable
		No additional information available
10.6.	Hazardous decomposition	n products
		No additional information available
SECT	ION 11: Toxicological i	information
11.1.	Information on toxicologi	
Acute t	-	: Not classified
	kane (110-54-3)	
	dermal rabbit	3000 mg/kg
	inhalation rat (ppm)	48000 ppm/4h
	JS (dermal)	3000.000 mg/kg body weight
ATE l	JS (gases)	48000.000 ppmV/4h
n-Hep	otane (142-82-5)	
LD50	dermal rabbit	3000 mg/kg
LC50	inhalation rat (mg/l)	103 g/m³ (Exposure time: 4 h)
	inhalation rat (ppm)	50266 ppm/1h
	JS (dermal)	3000.000 mg/kg body weight
	JS (gases)	25133.000 ppmV/4h
	JS (vapors)	103.000 mg/l/4h
ATE U	JS (dust, mist)	103.000 mg/l/4h
	ıtylene (115-11-7)	
LC50	inhalation rat (mg/l)	620 mg/l/4h
	inhalation rat (ppm)	≥ 10000
	JS (gases)	10000.000 ppmV/4h
	JS (vapors)	620.000 mg/l/4h
ATE l	JS (dust, mist)	620.000 mg/l/4h
Skin cor	rosion/irritation	: Not classified
		pH: Not applicable.
Serious	eye damage/irritation	: Not classified
		pH: Not applicable.
Respirat	ory or skin sensitization	: Not classified

SDS ID: PTG-4032



Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

erm cell mutagenicity	: Not classified
arcinogenicity	Not classified
Isobutylene (115-11-7)	
National Toxicology Program (NTP) Status	1 - Evidence of Carcinogenicity
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
SECTION 12: Ecological information	
12.1. Toxicity	
Ecology - general	: HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS.
n-Hexane (110-54-3)	
LC50 fish 1	2.54 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
n-Heptane (142-82-5)	
LC50 fish 1	375.0 mg/l (Exposure time: 96 h - Species: Cichlid fish)
12.2. Persistence and degradability	
PTG-4032	
Persistence and degradability	No ecological damage caused by this product.
Isobutylene (115-11-7) Persistence and degradability	The substance is biodegradable. Unlikely to persist.
- ·	
Nitrogen (7727-37-9)	No colorial demose caused by this product
Persistence and degradability	No ecological damage caused by this product.
Oxygen (7782-44-7)	No. and shall demonstrate the this was due to
Persistence and degradability	No ecological damage caused by this product.
12.3. Bioaccumulative potential	
PTG-4032	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
n-Heptane (142-82-5)	
Log Pow	4.66
Isobutylene (115-11-7)	
Log Pow	
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
Nitrogen (7727-37-9)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
Oxygen (7782-44-7)	
Log Pow	Not applicable.
Log Kow	Not applicable.
Bioaccumulative potential	No ecological damage caused by this product.
12.4. Mobility in soil	
PTG-4032	

EN (English US)

SDS ID: PTG-4032



### Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Da	ate of issue: 05/25/2015 Version: 1.0		
Isobutylene (115-11-7)			
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.		
Nitrogen (7727-37-9)			
Mobility in soil	No data available.		
Ecology - soil	No ecological damage caused by this product.		
Oxygen (7782-44-7)			
Mobility in soil	No data available.		
Ecology - soil	No ecological damage caused by this product.		
12.5. Other adverse effects			
Effect on ozone layer	: None.		
-			
SECTION 13: Disposal consider	rations		
13.1. Waste treatment methods			
Waste disposal recommendations	: Do not attempt to dispose of residual or unused quantities. Return container to supplier.		
SECTION 14: Transport informa	tion		
In accordance with DOT			
Transport document description	: UN1956 Compressed gas, n.o.s.		
UN-No.(DOT)	: UN1956		
Proper Shipping Name (DOT)	: Compressed gas, n.o.s.		
Hazard labels (DOT)	: 2.2 - Non-flammable gas		
DOT Symbols	: G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in parentheses following the PSN.		
Additional information			
Other information	: No supplementary information available.		
Special transport precautions	: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential because of the load and knows		

: Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers: - Ensure there is adequate ventilation. - Ensure that containers are firmly secured. - Ensure cylinder valve is closed and not leaking. - Ensure valve outlet cap nut or plug (where provided) is correctly fitted. - Ensure valve protection device (where provided) is correctly fitted.

Transport by sea	
UN-No. (IMDG)	: 1956
Proper Shipping Name (IMDG)	: COMPRESSED GAS, N.O.S.
Class (IMDG)	: 2.2 - Non-flammable, non-toxic gases
Limited quantities (IMDG)	: 120ml
EmS-No. (1)	: F-C
MFAG-No	: 620
EmS-No. (2)	: S-V
Air transport	
UN-No.(IATA)	: 1956
Proper Shipping Name (IATA)	: COMPRESSED GAS, N.O.S.
Class (IATA)	: 2
Instruction "cargo" (ICAO)	: 200

### EN (English US)

SDS ID: PTG-4032



Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication. Date of issue: 05/25/2015 Version: 1.0

Instruction "passenger" (ICAO)	: 200
Instruction "passenger" - Limited quantities (ICAO)	: FORBIDDEN

SECTION 15: Regulatory information	
15.1. US Federal regulations	

n-Hexane (	(110-54-3)

n-Hexane (110-54-3)			
Listed on the United States TSCA (Toxic Subs Listed on United States SARA Section 313	tances Control Act) inventory		
SARA Section 313 - Emission Reporting 1.0 %			
n-Heptane (142-82-5)			
Listed on the United States TSCA (Toxic Subs	tances Control Act) inventory		
EPA TSCA Regulatory Flag T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.			

### 15.2. International regulations

CANADA

### n-Hexane (110-54-3)

Listed on the Canadian DSL (Domestic Substances List)

### n-Heptane (142-82-5)

Listed on the Canadian DSL (Domestic Substances List)

### Nitrogen (7727-37-9)

Listed on the Canadian DSL (Domestic Substances List)

### Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

### **EU-Regulations**

### n-Hexane (110-54-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### National regulations 15.2.2.

### n-Hexane (110-54-3)

Listed on the AICS (Australian Inventory of Chemical Substances) Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory Listed on the Korean ECL (Existing Chemicals List) Listed on NZIoC (New Zealand Inventory of Chemicals) Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) Japanese Pollutant Release and Transfer Register Law (PRTR Law) Listed on the Canadian IDL (Ingredient Disclosure List)

15.3. US State regulations	
PTG-4032()	
U.S California - Proposition 65 - Carcinogens List	No
U.S California - Proposition 65 - Developmental Toxicity	No
U.S California - Proposition 65 - Reproductive Toxicity - Female	No
U.S California - Proposition 65 - Reproductive Toxicity - Male	Νο

EN (English US)

#### SDS ID: PTG-4032



Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 05/25/2015 Version: 1.0

U.S California -				No significance risk level	
Proposition 65 -	Proposition 65 -	Proposition 65 -	Proposition 65 -	(NSRL)	
Carcinogens List	Developmental Toxicity Reproductive Toxicity - Reproductive Toxicity - Male				
		Female			
No	No	No	No		
n-Heptane (142-82-5)		•			
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk leve	
Proposition 65	Proposition 65 -	Proposition 65 -	Proposition 65 -	(NSRL)	
Carcinogens List	Developmental Toxicity	Reproductive Toxicity -	Reproductive Toxicity - Male	(	
<u>-</u>	,	Female			
No	No	No	No		
Isobutylene (115-11-7)				1	
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk leve	
Proposition 65 -	Proposition 65 -	Proposition 65 -	Proposition 65 -	(NSRL)	
Carcinogens List	Developmental Toxicity	Reproductive Toxicity -	Reproductive Toxicity - Male		
		Female			
No	No	No	No		
Nitrogen (7727-37-9)					
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk leve	
Proposition 65 -	Proposition 65 -	Proposition 65 -	Proposition 65 -	(NSRL)	
Carcinogens List	Developmental Toxicity	Reproductive Toxicity -	Reproductive Toxicity - Male		
-		Female			
No	No	No	No		
Oxygen (7782-44-7)	·	·	· ·	•	
U.S California -	U.S California -	U.S California -	U.S California -	No significance risk leve	
Proposition 65 -	Proposition 65 -	Proposition 65 -	Proposition 65 -	(NSRL)	
Carcinogens List	Developmental Toxicity	Reproductive Toxicity -	Reproductive Toxicity - Male		
·		Female			
	No	No	No		
No					
n-Hexane (110-54-3)	aht To Know List				
<b>n-Hexane (110-54-3)</b> U.S Massachusetts - Rig		list			
<b>n-Hexane (110-54-3)</b> U.S Massachusetts - Rig	to Know Hazardous Substance	List			
<b>n-Hexane (110-54-3)</b> U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK	to Know Hazardous Substance	List			
n-Hexane (110-54-3) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK n-Heptane (142-82-5)	to Know Hazardous Substance ( (Right to Know) List	List			
n-Hexane (110-54-3) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK n-Heptane (142-82-5) U.S Massachusetts - Rig	to Know Hazardous Substance ( (Right to Know) List ght To Know List				
n-Hexane (110-54-3) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK n-Heptane (142-82-5) U.S Massachusetts - Rig U.S New Jersey - Right	to Know Hazardous Substance ( (Right to Know) List ght To Know List to Know Hazardous Substance				
n-Hexane (110-54-3) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK n-Heptane (142-82-5) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK	to Know Hazardous Substance ( (Right to Know) List ght To Know List to Know Hazardous Substance				
n-Hexane (110-54-3) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK n-Heptane (142-82-5) U.S Massachusetts - Rig U.S New Jersey - Right U.S Pennsylvania - RTK Isobutylene (115-11-7)	to Know Hazardous Substance ( (Right to Know) List ght To Know List to Know Hazardous Substance ( (Right to Know) List				
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Safety Data Sheet PTG-4032

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 05/25/2015 Version: 1.0

SECTION 16: Other information	
Other information	When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.
	Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.
	The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.
	Praxair SDSs are furnished on sale or delivery by Praxair or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Praxair sales representative, local distributor, or supplier, or download from www.praxair.com. If you have questions regarding Praxair SDSs, would like the document number and date of the latest SDS, or would like the names of the Praxair suppliers in your area, phone or write the Praxair Call Center (Phone: 1-800-PRAXAIR/1-800-772-9247; Address: Praxair Call Center, Praxair, Inc., P.O. Box 44, Tonawanda, NY 14151-0044).
	PRAXAIR and the Flowing Airstream design are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.

ISC Part Numbers: 1810-3127, 1810-9310, 1810-2249, 1810-5809, 1810-2939, 1810-6591, 1810-7292, 1810-7375, 1810-4950, 1810-4554

SDS US (GHS HazCom 2012) - Praxair

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

# ALCONOX MSDS

Section 1 : MANUFACTURER INFORMATION			
Product name:	Alconox		
Supplier:	Same as manufacturer.		
Manufacturer:	Alconox, Inc. 30 Glenn St. Suite 309 White Plains, NY 10603.		
Manufacturer emergency phone number:	800-255-3924. 813-248-0585 (outside of the United States).		
Manufacturer:	Alconox, Inc. 30 Glenn St. Suite 309 White Plains, NY 10603.		
Supplier MSDS date:	2009/04/20		

D.O.T. Classification: Not regulated.

Section 2 : HAZARDOUS INGREDIENTS					
C.A.S.	CONCENTRATION %	Ingredient Name	T.L.V.	LD/50	LC/50
25155- 30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL 1330 MG/KG MOUSE ORAL	NOT AVAILABLE
497-19- 8	7-13	SODIUM CARBONATE	NOT AVAILABLE	4090 MG/KG RAT ORAL 6600 MG/KG MOUSE ORAL	2300 MG/M3/2H RAT INHALATION 1200 MG/M3/2H MOUSE INHALATION
7722- 88-5	10-30	TETRASODIUM PYROPHOSPHATE	5 MG/M3	4000 MG/KG RAT ORAL 2980 MG/KG MOUSE ORAL	NOT AVAILABLE
7758-2 9-4	10-30	SODIUM PHOSPHATE	NOT AVAILABLE	3120 MG/KG RAT ORAL 3100 MG/KG MOUSE ORAL >4640 MG/KG RABBIT DERMAL	NOT AVAILABLE

#### Section 2A : ADDITIONAL INGREDIENT INFORMATION

Note: (supplier). CAS# 497-19-8: LD50 4020 mg/kg - rat oral. CAS# 7758-29-4: LD50 3100 mg/kg - rat oral.

Section 3	: PHYSICAL / CHEMICAL CHARACTERISTICS
Physical state:	Solid
Appearance & odor:	Almost odourless. White granular powder.
Odor threshold (ppm):	Not available.
Vapour pressure (mmHg):	Not applicable.

Not applicable.
Not available.
Not applicable.
Not applicable.
Not applicable.
(1% aqueous solution). 9.5
(water = 1). 0.85 - 1.10
100 - > 10% w/w
Not available.
None

#### Section 4 : FIRE AND EXPLOSION HAZARD DATA

1	
Flammability:	Not flammable.
Conditions of flammability:	Surrounding fire.
Extinguishing media:	Carbon dioxide, dry chemical, foam. Water Water fog.
Special procedures:	Self-contained breathing apparatus required. Firefighters should wear the usual protective gear.
Auto-ignition temperature:	NOT available.
Flash point (°C), method:	
Lower flammability limit (% vol):	Not applicable.
Upper flammability limit (% vol):	Not applicable.
Not available.	
Sensitivity to mechanical impact:	Not applicable.
Hazardous combustion products:	Oxides of carbon (COx). Hydrocarbons.
Rate of burning:	Not available.
Explosive power:	None

	Section 5 : REACTIVITY DATA
Chemical stability:	Stable under normal conditions.
Conditions of instability:	None known.
Hazardous polymerization:	Will not occur.
Incompatible substances:	Strong acids. Strong oxidizers.
Hazardous decomposition products:	See hazardous combustion products.

## Section 6 : HEALTH HAZARD DATA

1			
Route of entry:	Skin contact, eye contact, inhalation and ingestion.		
Effects of Acute			
<u>Exposure</u>	-		
•	May cause irritation.		
Skin contact:	Prolonged contact may cause irritation.		
Inhalation:	Airborne particles may cause irritation.		
2	May cause vomiting and diarrhea. May cause abdominal pain. May cause gastric distress.		
Effects of chronic exposure:	Contains an ingredient which may be corrosive.		
LD50 of product, species & route:	> 5000 mg/kg rat oral.		
LC50 of product, species & route:	Not available for mixture, see the ingredients section.		
Exposure limit of material:			
Sensitization to product:	: Not available.		
Carcinogenic effects:	: Not listed as a carcinogen.		
<b>Reproductive effects:</b>	: Not available.		
Teratogenicity:	Not available.		
Mutagenicity:	Not available.		
Synergistic materials:	: Not available.		
Medical conditions aggravated by exposure:			
<u>First Aid</u>	<u>d</u>		
Skin contact:	act: Remove contaminated clothing. Wash thoroughly with soap and water. Seek medical attention if irritation persists.		
Eye contact:	t: Check for and remove contact lenses. Flush eyes with clear, running water for 15 minutes while holdir eyelids open: if irritation persists, consult a physician.		
Inhalation:	Remove victim to fresh air. Seek medical attention if symptoms persist.		
Ingestion:	Dilute with two glasses of water. Never give anything by mouth to an unconscious person. Do not induce vomiting, seek immediate medical attention.		

Section 7 :	PRECAUTIONS FOR SAFE HANDLING AND USE
Leak/Spill:	Contain the spill. Recover uncontaminated material for re-use. Wear appropriate protective equipment. Contaminated material should be swept or shoveled into appropriate waste container for disposal.
Waste disposal:	In accordance with municipal, provincial and federal regulations.
	Protect against physical damage. Avoid breathing dust. Wash thoroughly after handling. Keep out of reach of children. Avoid contact with skin, eyes and clothing. Launder contaminated clothing prior to reuse.
Storage requirements:	Keep containers closed when not in use. Store away from strong acids or oxidizers. Store in a cool, dry and well ventilated area.
	Section 8 : CONTROL MEASURES
Precautionary Measures	
Gloves/Type:	
	Neoprene or rubber gloves.
Respiratory/Type:	$\bigcirc$
	If exposure limit is exceeded, wear a NIOSH approved respirator
Eye/Type:	$\bigcirc$
	Safety glasses with side-shields.
Footwear/Type:	Safety shoes per local regulations.
Clothing/Type:	As required to prevent skin contact.
Other/Type:	Eye wash capability should be in close proximity.
Ventilation requirements:	Local exhaust at points of emission.



# SAFETY DATA SHEET

Creation Date 24-Aug-2009 Revision Date 23-May-2017 Revision Number 4

1. Identification			
Product Name	Hydrochloric acid		
Cat No. :	A481-212; A481-212LC; S71942SC; S71943; S71943ND; S80036; S80038; SA49		
Synonyms	Muriatic acid; Hydrogen chloride; HCI (Technical/Certified ACS Plus/Optima/NF/FCC)		
Recommended Use Uses advised against	Laboratory chemicals. Not for food, drug, pesticide or biocidal product use		
Details of the supplier of the safety data sheet			
<u>Company</u> Fisher Scientific One Reagent Lane			

One Reagent Lane Fair Lawn, NJ 07410 Tel: (201) 796-7100

## **Emergency Telephone Number**

CHEMTREC®, Inside the USA: 800-424-9300 CHEMTREC®, Outside the USA: 001-703-527-3887

# **2. Hazard(s) identification**

#### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Corrosive to metals Skin Corrosion/irritation Serious Eye Damage/Eye Irritation Specific target organ toxicity (single exposure) Target Organs - Respiratory system. Category 1 Category 1 B Category 1 Category 3

## Label Elements

Signal Word Danger

Hazard Statements May be corrosive to metals Causes severe skin burns and eye damage May cause respiratory irritation



#### Precautionary Statements Prevention

Do not breathe dust/fume/gas/mist/vapors/spray Wash face, hands and any exposed skin thoroughly after handling Wear protective gloves/protective clothing/eye protection/face protection Use only outdoors or in a well-ventilated area Keep only in original container Response Immediately call a POISON CENTER or doctor/physician Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Skin IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse Eyes IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Ingestion IF SWALLOWED: Rinse mouth. DO NOT induce vomiting Spills Absorb spillage to prevent material damage Storage Store locked up Store in a well-ventilated place. Keep container tightly closed Store in corrosive resistant polypropylene container with a resistant inliner Store in a dry place Disposal Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

None identified

**Eye Contact** 

# 3. Composition / information on ingredients

Component	CAS-No	Weight %
Water	7732-18-5	62-65
Hydrochloric acid	7647-01-0	35-38

- -

4. First-ald measures
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion	Do not induce vomiting. Call a physician or Poison Control Center immediately.
Most important symptoms/effects	Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Notes to Physician	Treat symptomatically

5. Fire-fighting measures			
Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.		
Unsuitable Extinguishing Media	No information available		
Flash Point	No information available		
Method -	No information available		
Autoignition Temperature Explosion Limits	No information available		
Upper	No data available		
Lower	No data available		
Sensitivity to Mechanical Impac	t No information available		
Sensitivity to Static Discharge	No information available		

## Specific Hazards Arising from the Chemical

Corrosive Material. Causes burns by all exposure routes. Thermal decomposition can lead to release of irritating gases and vapors.

## **Hazardous Combustion Products**

Hydrogen chloride gas

## **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

#### NFPA

Health 3	<b>Flammability</b> 0	<b>Instability</b> 0	Physical hazards N/A	
6. Accidental release measures				
Personal Precautions	Use personal protective equipment. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Do not get in eyes, on skin, or on clothing.			
Environmental Precautions	Should not be released into information.	o the environment. See Section	n 12 for additional ecological	

**Methods for Containment and Clean** Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Up

## 7. Handling and storage

Handling	Wear personal protective equipment. Do not breathe vapors or spray mist. Do not get in
	eyes, on skin, or on clothing. Do not ingest.

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Corrosives area.

# 8. Exposure controls / personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Hydrochloric acid	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m <sup>3</sup> (Vacated) Ceiling: 5 ppm (Vacated) Ceiling: 7 mg/m <sup>3</sup>	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³	Ceiling: 5 ppm Ceiling: 7 mg/m <sup>3</sup>

#### <u>Legend</u>

ACGIH - American Conference of Governmental Industrial Hygienists OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures	Ensure that eyewash stations and safety showers are close to the workstation location.
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties							
Physical State	Liquid						
Appearance	Colorless						
Odor	pungent						
Odor Threshold	No information available						
рН	< 1						
Melting Point/Range	-35 °C / -31 °F						
Boiling Point/Range	57 °C / 135 °F @ 760 mmHg						
Flash Point	No information available						
Evaporation Rate	No information available						
Flammability (solid,gas)	Not applicable						
Flammability or explosive limits							
Upper	No data available						
Lower	No data available						
Vapor Pressure	125 mbar @ 20 °C						
Vapor Density	1.27						
Specific Gravity	1.18						
Solubility	Soluble in water						
Partition coefficient; n-octanol/water	No data available						
Autoignition Temperature	No information available						
Decomposition Temperature	No information available						
Viscosity	1.8 mPa.s @ 15°C						
Molecular Formula	HCI.H2O						
Molecular Weight	55.55						

# **10. Stability and reactivity**

**Reactive Hazard** 

None known, based on information available

Stability	Stable under normal conditions.					
Conditions to Avoid	Incompatible products. Excess heat.					
Incompatible Materials	Metals, Strong oxidizing agents, Bases, sodium hypochlorite, Amines, Fluorine, Cyanides, Alkaline					
Hazardous Decomposition Produ	<b>ucts</b> Hydrogen chloride gas					
Hazardous Polymerization	Hazardous polymerization does not occur.					
Hazardous Reactions	Contact with metals may evolve flammable hydrogen gas.					
	11. Toxicological information					
Acute Toxicity						
Product Information						
Oral LD50	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.					
Dermal LD50	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.					
Vapor LC50	Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.					
Component Information						

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Hydrochloric acid	238 - 277 mg/kg (Rat)	>5010 mg/kg (Rabbit)	1.68 mg/L (Rat)1 h
Foxicologically Synergistic	No information available		

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Products
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Delayed and immediate effects as well as chronic effects from short and long-term exposure

No information available

Irritation Causes burns by all exposure routes

Sensitization

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	ARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed				
Hydrochloric acid	7647-01-0	Not listed				

IARC: (International Agency for	Research on Cancer)	
Group 1 - Carcinogenic to Huma	ans	
Group 2A - Probably Carcinoger	nic to Humans	

Group 2B - Possibly Carcinogenic to Humans

Mutagenic EffectsNo information availableReproductive EffectsNo information available.Developmental EffectsNo information available.TeratogenicityNo information available.STOT - single exposureRespiratory system<br/>None known

Aspiration hazard No information available

Symptoms / effects,both acute and<br/>delayedProduct is a corrosive material. Use of gastric lavage or emesis is contraindicated.<br/>Possible perforation of stomach or esophagus should be investigated: Ingestion causes<br/>severe swelling, severe damage to the delicate tissue and danger of perforation

Endocrine Disruptor Information No information available

## Other Adverse Effects

The toxicological properties have not been fully investigated.

# **12. Ecological information**

Ecotoxicity

Do not empty into drains. Large amounts will affect pH and harm aquatic organisms.

Component Freshwat		ater Algae	Freshwater Fish	Microtox	Water Flea	
Hydrochloric acid -		-	282 mg/L LC50 96 h	-	56mg/L EC50 72h Daphnia	
			Gambusia affinis			
			mg/L LC50 48 h Leucscus			
			idus			
Persistence and Degrada	ability	ation available.				
Bioaccumulation/ Accum	nulation					
Mobility Will likely be mobile in the environment due to its water solubility.						
13. Disposal considerations						

Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## **14. Transport information**

UN-No	UN1789
Proper Shipping Name	HYDROCHLORIC ACID
Hazard Class	8
Packing Group	II
<u>TDG</u>	
UN-No	UN1789
Proper Shipping Name	HYDROCHLORIC ACID
Hazard Class	8
Packing Group	II
UN-No	UN1789
Proper Shipping Name	Hydrochloric acid
Hazard Class	8
Packing Group	II
IMDG/IMO	
UN-No	UN1789
Proper Shipping Name	Hydrochloric acid
Hazard Class	8
Packing Group	II
	15. Regulatory

## **15. Regulatory information**

#### International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	Х	Х	-	231-791-2	-		Х	-	Х	Х	Х
Hydrochloric acid	Х	Х	-	231-595-7	-		Х	Х	Х	Х	Х

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

#### U.S. Federal Regulations

## TSCA 12(b)

Not applicable

## SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Hydrochloric acid	7647-01-0	35-38	1.0

## SARA 311/312 Hazard Categories

a a control in a catogonico	
Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

#### **CWA (Clean Water Act)**

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Hydrochloric acid	Х	5000 lb	-	-

## Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Hydrochloric acid	Х		-

# **OSHA** Occupational Safety and Health Administration Not applicable

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Hydrochloric acid	-	TQ: 5000 lb

## CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Hydrochloric acid	5000 lb	5000 <b>l</b> b
Onlife multiple of the standard data not contain any Dreposition (C. chamicale		

California Proposition 65This product does not contain any Proposition 65 chemicals

## U.S. State Right-to-Know

#### Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	Х	-	-
Hydrochloric acid	X	X	Х	Х	X

#### **U.S.** Department of Transportation

Reportable Quantity (RQ):	Υ
DOT Marine Pollutant	Ν
DOT Severe Marine Pollutant	Ν

#### **U.S. Department of Homeland Security**

This product contains the following DHS chemicals:

Component	DHS Chemical Facility Anti-Terrorism Standard

Hydrochloric acid	0 lb STQ (anhydrous); 11250 lb STQ (37% concentration or
	greater)

Other International Regulations

Mexico - Grade

No information available

## **16. Other information**

**Prepared By** 

Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com

Creation Date	24-Aug-2009
Revision Date	23-May-2017
Print Date	23-May-2017
Revision Summary	SDS sections updated. 2. 3. 11.

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

# **End of SDS**



# SAFETY DATA SHEET

Creation Date 28-January-2010

Revision Date 24-May-2017

**Revision Number** 3

**1. Identification Product Name** Buffer Solution, pH 4.00, Color-Coded Red SB101-4, SB101-20, SB101-500 Cat No. : Synonyms (Certified) Laboratory chemicals. **Recommended Use** Uses advised against Not for food, drug, pesticide or biocidal product use Details of the supplier of the safety data sheet Company Manufacturer Importer/Distributor Fisher Scientific **Fisher Scientific** 112 Colonnade Road, One Reagent Lane Ottawa, ON K2E 7L6, Fair Lawn, NJ 07410 Tel: (201) 796-7100 Canada Tel: 1-800-234-7437 **Emergency Telephone Number** CHEMTREC®. Inside the USA: 800-424-9300 CHEMTREC®. Outside the USA: 001-703-527-3887

# **2. Hazard(s) identification**

## **Classification**

WHMIS 2015 Classification

Not classified under the Hazardous Products Regulations (SOR/2015-17)

Based on available data, the classification criteria are not met

Label Elements None required

# **3. Composition / information on ingredients**

Component	CAS-No	Weight %
Water	7732-18-5	98.91
1,2-Benzenedicarboxylic acid, monopotassium salt	877-24-7	1.0
Formaldehyde	50-00-0	0.05
Methyl alcohol	67-56-1	0.02
Fluorescein, 2',4',5',7'-tetraiodo, disodium salt	16423-68-0	0.02

# **4. First-aid measures**

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.
Ingestion	Do not induce vomiting. Obtain medical attention.
Most important symptoms/effects Notes to Physician	None reasonably foreseeable. Treat symptomatically

## **5. Fire-fighting measures**

**Suitable Extinguishing Media** Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.

Unsuitable Extinguishing Media	No information available
Flash Point Method -	Not applicable No information available
Autoignition Temperature Explosion Limits	No information available
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

## Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors.

#### **Hazardous Combustion Products**

Thermal decomposition can lead to release of irritating gases and vapors

**Protective Equipment and Precautions for Firefighters** 

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

<u>NFPA</u> Health 1	Flammability 0	<b>Instability</b> 0	Physical hazards N/A
	6. Accidental re	lease measures	
Personal Precautions	Use personal protective eq eyes and clothing.	uipment. Ensure adequate ver	ntilation. Avoid contact with skin,
Environmental Precautions	Should not be released into information.	o the environment. See Sectior	n 12 for additional ecological

**Methods for Containment and Clean** Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Up

	7. Handling and storage
Handling	Wear personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place.

## 8. Exposure controls / personal protection

#### Exposure Guidelines

Component	Alberta	British Columbia	Ontario TWAEV	Quebec	ACGIH TLV	OSHA PEL	NIOSH IDLH
Formaldehyde	Ceiling: 1 ppm Ceiling: 1.3 mg/m <sup>3</sup> TWA: 0.75 ppm TWA: 0.9 mg/m <sup>3</sup>		STEL: 1 ppm CEV: 1.5 ppm	Ceiling: 2 ppm Ceiling: 3 mg/m³	Ceiling: 0.3 ppm		IDLH: 20 ppm TWA: 0.016 ppm Ceiling: 0.1 ppm
Methyl alcohol	TWA: 200 ppm TWA: 262 mg/m <sup>3</sup> STEL: 250 ppm STEL: 328 mg/m <sup>3</sup> Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm STEL: 250 ppm Skin	TWA: 200 ppm TWA: 262 mg/m <sup>3</sup> STEL: 250 ppm STEL: 328 mg/m <sup>3</sup> Skin	TWA: 200 ppm STEL: 250 ppm Skin	(Vacated) TWA: 200 ppm (Vacated) TWA: 260 mg/m <sup>3</sup> (Vacated) STEL: 250 ppm (Vacated) STEL: 325 mg/m <sup>3</sup> Skin TWA: 200 ppm TWA: 260 mg/m <sup>3</sup>	IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m <sup>3</sup> STEL: 250 ppm STEL: 325 mg/m <sup>3</sup>

#### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

#### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

#### Personal protective equipment

Eye Protection	OSHA's eye and face prote EN166.	e eyeglasses or chemical safet ection regulations in 29 CFR 19	10.133 or European Standard
Hand Protection	Wear appropriate protectiv	e gloves and clothing to prever	nt skin exposure.
Glove material	Breakthrough time	Glove thickness	Glove comments
Nitrile rubber	See manufacturers recommendations	-	Splash protection only

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatability, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

#### **Respiratory Protection**

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

When RPE is used a face piece Fit Test should be conducted

## Environmental exposure controls

No information available.

## **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and at the end of workday.

<b>9. Physical</b>	sical and chemical properties			
Physical State	Liquid			
Appearance	Red			
Odor	Odorless			
Odor Threshold	No information available			
рН	4.0			
Melting Point/Range	0 °C / 32 °F			
Boiling Point/Range	100 °C / 212 °F			
Flash Point	Not applicable			
Evaporation Rate	1.0 (ether = 1)			
Flammability (solid,gas)	No information available			
Flammability or explosive limits				
Upper	No data available			
Lower	No data available			
Vapor Pressure	No information available			
Vapor Density	0.7 (Water = 1.0)			
Specific Gravity	1.0			
Solubility	Soluble in water			
Partition coefficient; n-octanol/water	No data available			
Autoignition Temperature	No information available			
Decomposition Temperature	No information available			
Viscosity	No information available			

# **10. Stability and reactivity**

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Excess heat.
Incompatible Materials	None known
Hazardous Decomposition Product	${f s}$ Thermal decomposition can lead to release of irritating gases and vapors
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

# **11. Toxicological information**

## Acute Toxicity

Product	Information	
Compon	ent Informati	on

No acute toxicity information is available for this product

Component	LD50 Oral	LD50 Derma	LC50 Inhalation
Water	-	Not listed	Not listed
1,2-Benzenedicarboxylic acid, monopotassium salt	LD50 > 3200 mg/kg (Rat)	Not listed	Not listed
Formaldehyde	500 mg/kg (Rat)	LD50 = 270 mg/kg (Rabbit)	0.578 mg/L (Rat)4 h
Methyl alcohol	Calc. ATE 60 mg/kg	Calc. ATE 60 mg/kg	Calc. ATE 0.6 mg/L (vapours) or

		LD50 >			17100 mg/kg ( Rabbit		<b>g/L (mists)</b> 2 mg/L(Rat)4 h	
Fluorescein, 2',4',5',7' disodium sal		LD	LD50 = 1840 mg/kg (Rat) Not listed		No	Not listed		
Toxicologically Syne Products Delayed and immedi	-		No information ava II as chronic effe		ı short aı	nd long-term expos	sure	
Irritation		I	No information ava	ailable				
Sensitization		I	No information ava	ailable				
Carcinogenicity		-	The table below in	idicates v	vhether e	ach agency has liste	ed any ingredient	as a carcinogen.
Component	CAS-N	0	IARC	N	TP	ACGIH	OSHA	Mexico
Water	7732-18		Not listed		listed	Not listed	Not listed	Not listed
1,2-Benzenedicarboxyl ic acid,	877-24-		Not listed	Not	listed	Not listed	Not listed	Not listed
monopotassium salt	E0.00		Crown 1	- Kn		4.2	v	4.0
Formaldehyde Methyl alcohol	<u> </u>		Group 1 Not listed		own listed	A2 Not listed	X Not listed	A2 Not listed
Fluorescein,	16423-68		Not listed		listed	Not listed	Not listed	Not listed
2',4',5',7'-tetraiodo, disodium salt	10420-00	0-0	Not listed	Not	listed	Notifisted	Not listed	Not listed
NTP: (National Tox ACGIH: (American Hygienists)		e of Go		 	Known - Ki Reasonabl Carcinoger A1 - Knowi A2 - Suspe A3 - Anima	onal Toxicity Program) nown Carcinogen y Anticipated - Reason n Human Carcinogen cted Human Carcinog I Carcinogen merican Conference o	en	
Mutagenic Effects	s No information available							
Reproductive Effects No information available.								
Developmental Effects No information available.								
Teratogenicity No information available.								
STOT - single exposureNone knownSTOT - repeated exposureNone known								
Aspiration hazard	spiration hazard No information available							
Symptoms / effects,both acute and No information available delayed								
Endocrine Disruptor	Informatio	on l	No information ava	ailable				
Other Adverse Effects         The toxicological properties have not been fully investigated. See actual entry in RT complete information.						t been fully investiga	ntry in RTECS for	

# **12. Ecological information**

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Formaldehyde	Not listed	Leuciscus idus: LC50 = 15	Not listed	EC50 = 20 mg/L 96h

		mg/L 96h		EC50 = 2 mg/L 48h
Methyl alcohol	Not listed		EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min	5

Persistence and Degradability

No information available

#### **Bioaccumulation/Accumulation**

No information available.

Mobility

Component	log Pow
Formaldehyde	-0.35
Methyl alcohol	-0.74

## **13. Disposal considerations**

Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Formaldehyde - 50-00-0	U122	-
Methyl alcohol - 67-56-1	U154	-

14. Transport information				
DOT	Not regulated			
DOT TDG IATA	Not regulated			
IATA_	Not regulated			
IMDG/IMO	Not regulated			
	15. Regulatory information			

#### International Inventories

Component	DSL	NDSL	TSCA	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	Х	-	Х	231-791-2	-		Х	-	Х	Х	Х
1,2-Benzenedicarboxylic acid, monopotassium salt	Х	-	Х	212-889-4	-		Х	Х	Х	Х	Х
Formaldehyde	Х	-	Х	200-001-8	-		Х	Х	Х	Х	Х
Methyl alcohol	Х	-	Х	200-659-6	-		Х	Х	Х	Х	Х
Fluorescein, 2',4',5',7'-tetraiodo, disodium salt	Х	-	Х	240-474-8	-		Х	Х	Х	Х	Х

#### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

Component	Canada - National Pollutant	Canadian Environmental	Canada's Chemicals Management
	Release Inventory (NPRI)	Protection Agency (CEPA)	Plan (CEPA)
		<ul> <li>List of Toxic Substances</li> </ul>	
Formaldehyde	Part 1, Group A Substance	Schedule I	
	Part 5, Individual Substances		
Methyl alcohol	Part 1, Group A Substance		
	Part 5, Individual Substances		

## **16. Other information**

**Prepared By** 

Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com

Creation Date	28-January-2010
Revision Date	24-May-2017
Print Date	24-May-2017
Revision Summary	This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

#### Disclaimer

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# **End of SDS**



# SAFETY DATA SHEET

Creation Date 25-Oct-2004

Revision Date 30-Aug-2017

**Revision Number** 2

**1. Identification Product Name** Buffer solution pH 7, Phosphate buffer, traceable to NIST AC383850000; AC383850010; AC383855000 Cat No. : Synonyms No information available Laboratory chemicals. **Recommended Use** Uses advised against Not for food, drug, pesticide or biocidal product use Details of the supplier of the safety data sheet Company Acros Organics Fisher Scientific One Reagent Lane One Reagent Lane

Fair Lawn, NJ 07410

Fair Lawn, NJ 07410 Tel: (201) 796-7100

## **Emergency Telephone Number**

For information US call: 001-800-ACROS-01 / Europe call: +32 14 57 52 11 Emergency Number US:001-201-796-7100 / Europe: +32 14 57 52 99 CHEMTREC Tel. No.US:001-800-424-9300 / Europe:001-703-527-3887

## **2. Hazard(s) identification**

**Classification** 

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Based on available data, the classification criteria are not met

#### Label Elements None required

Hazards not otherwise classified (HNOC) None identified

# **3.** Composition / information on ingredients

Component	CAS-No	Weight %
Buffer solution pH 7, Phosphate buffer, traceable to	NA	100
NIST		
Water	7732-18-5	99
Sodium phosphate dibasic	7558-79-4	0.426
Dihydrogen potassium phosphate	7778-77-0	0.272
Sodium chloride	7647-14-5	0.117
Mercuric chloride	7487-94-7	0.001

	4. First-aid measures					
Eye Contact	Rinse immediately with pl medical attention.	enty of water, also under the ey	elids, for at least 15 minutes. Get			
Skin Contact	Wash off immediately with soap and plenty of water while removing all contaminate clothes and shoes. Obtain medical attention.					
Inhalation	Remove from exposure, li	e down. Move to fresh air.				
Ingestion	Clean mouth with water.	Set medical attention.				
Most important symptoms and effects	No information available.					
Notes to Physician	Treat symptomatically					
	5. Fire-fighti	ng measures				
Suitable Extinguishing Media	Substance is nonflammat	le; use agent most appropriate	to extinguish surrounding fire.			
Unsuitable Extinguishing Media	No information available					
Flash Point	No information available					
Method -	No information available					
Autoignition Temperature Explosion Limits	No information available					
Upper	No data available					
Lower	No data available					
Sensitivity to Mechanical Impact Sensitivity to Static Discharge	No information available					
Specific Hazards Arising from the C None reasonably foreseeable.	hemical					
Hazardous Combustion Products None known Protective Equipment and Precaution As in any fire, wear self-contained breat protective gear.		demand, MSHA/NIOSH (approv	red or equivalent) and full			
<u>NFPA</u>						

Health 0	Flammability 0	<b>Instability</b> 0	Physical hazards N/A		
	6. Accidental re	lease measures			
Personal Precautions	Ensure adequate ventilatio	n. Use personal protective equ	ipment.		
Environmental Precautions	See Section 12 for addition	al ecological information			
Methods for Containment and C Up	•	nt material (e.g. sand, silica ge closed containers for disposal	· · · ·		
	7. Handling a	and storage			
Handling	Avoid contact with skin and eyes. Do not breathe vapors or spray mist.				
Storage	Keep in a dry, cool and well-ventilated place. Keep container tightly closed.				

# 8. Exposure controls / personal protection

## Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Mercuric chloride	TWA: 0.025 mg/m <sup>3</sup>	(Vacated) Ceiling: 0.1 mg/m <sup>3</sup>	IDLH: 10 mg/m <sup>3</sup>	TWA: 0.05 mg/m <sup>3</sup>
	Skin		TWA: 0.05 mg/m <sup>3</sup>	
			Ceiling: 0.1 mg/m <sup>3</sup>	

#### <u>Legend</u>

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures None under normal use conditions.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
<b>Respiratory Protection</b>	No protective equipment is needed under normal use conditions.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties					
Physical State	Liquid				
Appearance	Clear				
Odor	No information available				
Odor Threshold	No information available				
рН	7.0				
Melting Point/Range	No data available				
Boiling Point/Range	No information available				
Flash Point	No information available				
Evaporation Rate	No information available				
Flammability (solid,gas)	Not applicable				
Flammability or explosive limits					
Upper	No data available				
Lower	No data available				
Vapor Pressure	No information available				
Vapor Density	No information available				
Specific Gravity	1.000				
Solubility	Miscible with water				
Partition coefficient; n-octanol/water	No data available				
Autoignition Temperature	No information available				
Decomposition Temperature	No information available				
Viscosity	No information available				
-					

# **10. Stability and reactivity**

Page 3/7

**Reactive Hazard** 

None known, based on information available

Stable.

Stability

Conditions to Avoid	Incompatible products.		
Incompatible Materials	Strong oxidizing agents		
Hazardous Decomposition Products None under normal use conditions			
Hazardous Polymerization	No information available.		
Hazardous Reactions	None under normal processing.		

## **11. Toxicological information**

## Acute Toxicity

Product Information

-

No acute toxicity information is available for this product

Component	Component LD50 Oral		LC50 Inhalation	
Water	-	Not listed	Not listed	
Sodium phosphate dibasic	LD50 = 17 g/kg (Rat)	Not listed	Not listed	
Dihydrogen potassium phosphate	Not listed	LD50 > 4640 mg/kg (Rabbit)	Not listed	
Sodium chloride	LD50 = 3 g/kg (Rat)	LD50 > 10 g/kg (Rabbit)	LC50 > 42 g/m³(Rat)1 h	
Mercuric chloride	25.9 mg/kg (Rat) 1 mg/kg (Rat)	LD50 = 41 mg/kg (Rabbit) LD50 = 41 mg/kg (Rat)	Not listed	

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation

No information available

Sensitization

No information available

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Buffer solution pH 7, Phosphate buffer, traceable to NIST	NA	Not listed				
Water	7732-18-5	Not listed				
Sodium phosphate dibasic	7558-79-4	Not listed				
Dihydrogen potassium phosphate	7778-77-0	Not listed				
Sodium chloride	7647-14-5	Not listed				
Mercuric chloride	7487-94-7	Not listed				

**Mutagenic Effects** 

No information available

**Reproductive Effects** No information available.

Developmental EffectsNo information available.TeratogenicityNo information available.

Teratogenicity No information availated and the second sec

STOT - single exposureNone knownSTOT - repeated exposureNone known

Aspiration hazard No information available

Symptoms / effects, both acute and No information available

## delayed

Endocrine Disruptor Information

No information available

Other Adverse Effects

The toxicological properties have not been fully investigated.

# **12. Ecological information**

## **Ecotoxicity**

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Sodium chloride	Not listed	Pimephals prome: LC50: 7650 mg/L/96h	Not listed	EC50: 1000 mg/L/48h
Mercuric chloride	Not listed	LC50: 0.02 - 0.26 mg/L, 96h static (Cyprinus carpio) LC50: = 0.4 mg/L, 96h semi-static (Lepomis macrochirus) LC50: = 4.425 mg/L, 96h (Cyprinus carpio) LC50: 0.014 - 0.019 mg/L, 96h flow-through (Oncorhynchus mykiss) LC50: 0.13 - 0.19 mg/L, 96h static (Oncorhynchus mykiss) LC50: = 0.155 mg/L, 96h (Pimephales promelas) LC50: 0.1 - 0.182 mg/L, 96h flow-through (Pimephales promelas) LC50: 0.096 - 0.133 mg/L, 96h static (Lepomis macrochirus) LC50: 5.933 - 10.34 mg/L, 96h static (Poecilia reticulata) LC50: = 0.041 mg/L, 96h (Poecilia reticulata)	Not listed	EC50=0.0015mg/L 48 h EC50=0.012mg/L >48 h

Bioaccumulation/ Accumulation

Mobility

Г

No information available.

. Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations							
Waste Disposal Methods	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.						

14. Transport information					
DOT	Not regulated				
DOT TDG IATA	Not regulated				
IATA_	Not regulated				
IMDG/IMO	Not regulated				
15. Regulatory information					

All of the components in the product are on the following Inventory lists: X = listed

#### International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	Х	Х	-	231-791-2	-		Х	-	Х	Х	Х
Sodium phosphate dibasic	Х	Х	-	231-448-7	-		Х	Х	Х	Х	Х
Dihydrogen potassium phosphate	Х	Х	-	231-913-4	-		Х	Х	Х	Х	х
Sodium chloride	Х	Х	-	231-598-3	-		Х	Х	Х	Х	Х
Mercuric chloride	Х	Х	-	231-299-8	-		Х	Х	Х	Х	Х

# Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

#### U.S. Federal Regulations

TSCA 12(b)	Not applicable
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SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Mercuric chloride	7487-94-7	0.001	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

#### **CWA (Clean Water Act)**

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Sodium phosphate dibasic	Х	5000 lb	-	-
Mercuric chloride	-	-	Х	-

#### Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Mercuric chloride	Х		-

**OSHA** Occupational Safety and Health Administration Not applicable

#### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Sodium phosphate dibasic	5000 lb	-

Mercuric chloride

California Proposition 65

This product contains the following proposition 65 chemicals

-

500 **l**b

Component	CAS-No	California I	Prop. 65	Prop 65 NSRL	Category
Mercuric chloride	7487-94-7	Developmental		-	Developmental
J.S. State Right-to-Know					
Regulations					
Component	Massachusetts	New Jersey	Pennsylva	nia Illinois	Rhode Island
Water	-	-	Х	-	-
Sodium phosphate dibasic	Х	X	X	-	-
Mercuric chloride	Х	Х	Х	Х	-

## U.S. Department of Transportation

Reportable Quantity (RQ):	Ν
DOT Marine Pollutant	Ν
DOT Severe Marine Pollutant	Ν

## U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

## Other International Regulations

	16. Other information		
Prepared By	Regulatory Affairs Thermo Fisher Scientific Email: EMSDS.RA@thermofisher.com		
Creation Date Revision Date Print Date Revision Summary	25-Oct-2004 30-Aug-2017 30-Aug-2017 This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).		

No information available

Disclaimer

Mexico - Grade

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

# End of SDS



# SAFETY DATA SHEET

Creation Date 28-Jan-2010

Revision Date 24-May-2017

**Revision Number** 2

1. IdentificationProduct NameBuffer Solution, pH 10.00, Color-Coded BlueCat No. :SB115-4, SB115-20, SB115-500SynonymsNo information availableRecommended Use<br/>Uses advised againstLaboratory chemicals.<br/>Not for food, drug, pesticide or biocidal product use

## Details of the supplier of the safety data sheet

#### <u>Company</u>

Fisher Scientific One Reagent Lane Fair Lawn, NJ 07410 Tel: (201) 796-7100

#### Emergency Telephone Number

CHEMTREC®, Inside the USA: 800-424-9300 CHEMTREC®, Outside the USA: 001-703-527-3887

## **2. Hazard(s) identification**

**Classification** 

Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Based on available data, the classification criteria are not met

Label Elements None required

Hazards not otherwise classified (HNOC) None identified

# **3. Composition / information on ingredients**

Component	CAS-No	Weight %
Water	7732-18-5	97.78
Ethylenediaminetetraacetic acid, disodium salt dihydrate	6381-92-6	1.0
Potassium carbonate	584-08-7	0.6
Boron potassium oxide (B4K2O7)	1332-77-0	0.4
Potassium hydroxide	1310-58-3	0.2

4. First-aid measures			
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Obtain medical attention.		
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.		
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.		
Ingestion	Do not induce vomiting. Obtain medical attention.		
Most important symptoms/effects Notes to Physician	No information available. Treat symptomatically		

5. Fire-fighting measures

Suitable Extinguishing Media	Substance is nonflammable; use agent most appropriate to extinguish surrounding fire.
Unsuitable Extinguishing Media	No information available
Elech Deint	No information evoluble

Flash Point Method -	No information available No information available
Autoignition Temperature Explosion Limits	No information available
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact Sensitivity to Static Discharge	No information available No information available

Specific Hazards Arising from the Chemical

Thermal decomposition can lead to release of irritating gases and vapors.

## **Hazardous Combustion Products**

Thermal decomposition can lead to release of irritating gases and vapors

**Protective Equipment and Precautions for Firefighters** 

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

<u>NFPA</u> Health 1	Flammability 0	<b>Instability</b> 0	Physical hazards N/A
	6. Accidental re	lease measures	
Personal Precautions	Use personal protective eq eyes and clothing.	uipment. Ensure adequate ver	tilation. Avoid contact with skin,
Environmental Precautions	Should not be released into information.	o the environment. See Sectior	n 12 for additional ecological

Methods for Containment and Clean Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Up

	7. Handling and storage
Handling	Wear personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist.
Storage	Keep containers tightly closed in a dry, cool and well-ventilated place.

# 8. Exposure controls / personal protection

#### Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH	Mexico OEL (TWA)
Boron potassium oxide	TWA: 2 mg/m <sup>3</sup>			
(B4K2O7)	STEL: 6 mg/m <sup>3</sup>			
Potassium hydroxide	Ceiling: 2 mg/m <sup>3</sup>	(Vacated) Ceiling: 2 mg/m <sup>3</sup>	Ceiling: 2 mg/m <sup>3</sup>	

## <u>Legend</u>

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures	Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.
Personal Protective Equipment	
Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory Protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physica	l and chemical properties
Physical State	Liquid
Appearance	Blue
Odor	Odorless
Odor Threshold	No information available
рН	10.0
Melting Point/Range	0 °C / 32 °F
Boiling Point/Range	100 °C / 212 °F
Flash Point	No information available
Evaporation Rate	> 1 (Water = 1.0)
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No information available
Specific Gravity	1.013 @ 25°C
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

# **10. Stability and reactivity**

**Reactive Hazard** 

None known, based on information available

Stability	Stable under normal conditions.
Conditions to Avoid	Excess heat.
Incompatible Materials	None known
Hazardous Decomposition Product	${f s}$ Thermal decomposition can lead to release of irritating gases and vapors
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

# **11. Toxicological information**

## Acute Toxicity

# Product Information No acute toxicity information is available for this product

Component Information		·	
Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Water	-	Not listed	Not listed
Potassium carbonate	> 2000 mg/kg (Rat)	Not listed	Not listed
Potassium hydroxide	LD50 = 284 mg/kg (Rat)	Not listed	Not listed

Toxicologically Synergistic Products No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation No information available

Sensitization No information available

Carcinogenicity

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS-No	IARC	NTP	ACGIH	OSHA	Mexico
Water	7732-18-5	Not listed	Not listed	Not listed	Not listed	Not listed
Ethylenediaminetetraa cetic acid, disodium salt dihydrate	6381-92-6	Not listed	Not listed	Not listed	Not listed	Not listed
Potassium carbonate	584-08-7	Not listed	Not listed	Not listed	Not listed	Not listed
Boron potassium oxide (B4K2O7)	1332-77-0	Not listed	Not listed	Not listed	Not listed	Not listed
Potassium hydroxide	1310-58-3	Not listed	Not listed	Not listed	Not listed	Not listed
Iutagenic Effects		No information ava	ailable		-	
Reproductive Effect		No information available. No information available.				
eratogenicity		No information available.				
TOT - single expos TOT - repeated exp						
spiration hazard		No information ava	ailable			
ymptoms / effects lelayed	both acute and	and No information available				
Indoorino Diorumto.	Information	formation No information available				
indocrine Disruptor						

complete information.

# **12. Ecological information**

Ecotoxicity

Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Potassium carbonate	Not listed	LC50 <510 mg/L/96h (Pimephales promelas)	Not listed	Not listed
Potassium hydroxide	Not listed	LC50: = 80 mg/L, 96h static (Gambusia affinis)	Not listed	Not listed
Persistence and Degradal	bility No information	on available		•

Bioaccumulation/ Accumulation No information available.

#### Mobility

Component	log Pow
Potassium hydroxide	0.83

## **13. Disposal considerations**

Waste Disposal Methods

# Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and

hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport information				
DOT TDG IATA	Not regulated			
<u>TDG</u>	Not regulated			
	Not regulated			
IMDG/IMO	Not regulated			

## **15. Regulatory information**

#### International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	IECSC	KECL
Water	Х	Х	-	231-791-2	-		Х	-	Х	Х	Х
Ethylenediaminetetraacetic acid, disodium salt dihydrate	-	Х	-	-	-		Х	-	Х	Х	-
Potassium carbonate	Х	Х	-	209-529-3	-		Х	Х	Х	Х	Х
Boron potassium oxide (B4K2O7)	Х	Х	-	215-575-5	-		Х	-	Х	Х	Х
Potassium hydroxide	Х	Х	-	215-181-3	-		Х	Х	Х	Х	Х

Legend:

X - Listed

E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.

F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.

N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.

P - Indicates a commenced PMN substance

R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule

T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.

XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).

Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.

Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

## U.S. Federal Regulations

TSCA 12(b)	Not applicable
SARA 313	Not applicable

SARA 311/312 Hazard Categories	
Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

#### **CWA (Clean Water Act)**

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Potassium hydroxide	Х	1000 <b>l</b> b	-	-

## **Clean Air Act**

Not applicable

OSHA Occupational Safety and Health Administration Not applicable

#### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Potassium hydroxide	1000 lb	-
	and wat do no wat contain any Draw a sitis a CE al.	- unit and -

**California Proposition 65** This product does not contain any Proposition 65 chemicals

#### U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Water	-	-	Х	-	-
Boron potassium oxide (B4K2O7)	-	Х	-	-	-
Potassium hydroxide	Х	Х	Х	-	Х

#### **U.S.** Department of Transportation

Reportable Quantity (RQ):	Υ
DOT Marine Pollutant	Ν
DOT Severe Marine Pollutant	Ν

## U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

#### Other International Regulations

## Mexico - Grade

No information available

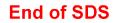
	16. Other information	
Prepared By	Regulatory Affairs Thermo Fisher Scientific	
	Email: EMSDS.RA@thermofisher.com	
Creation Date	28-Jan-2010	
Revision Date	24-May-2017	
Print Date	24-May-2017	

#### **Revision Summary**

This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

#### Disclaimer

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# Safety Data Sheet: Simple Green® All-Purpose Cleaner

Version No. 13000-14B Issue Date: September 13, 2014

Supersedes Date: January 7, 2014

OSHA HCS-2012 / GHS

## Section 1: IDENTIFICATION

Product Nar Additional N		Simple Green <sup>®</sup> All-Purpose Cleaner		
Manufactur	er's Part	Number: *Please refer to Sectio	n 16	
Recomment Restrictions		Cleaner & Degreaser for water to Do not use on non-rinsable surfa		
Company:	Sunshin	e Makers, Inc.	Telephone:	800-228-0709 • 562-795-6000 Mon – Fri, 8am – 5pm PST
15922 Pacific Coast Highway		Fax:	562-592-3830	
Huntington Beach, CA 92649 USA		Email:	info@simplegreen.com	
Emergency	Phone:	Chem-Tel 24-Hour Emergency Se	rvice: 800-255-39	024

## Section 2: HAZARDS IDENTIFICATION

This product is not classified as hazardous under 2012 OSHA Hazard Communication Standards (29 CFR 1910.1200).

OSHA HCS 2012 Label Elements Signal Word: None

Hazard Symbol(s)/Pictogram(s): None required

Hazard Statements: None Precautionary Statements: None Hazards Not Otherwise Classified (HNOC): None Other Information: None Known

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Percent Range
Water	7732-18-5	> 84.8%*
Ethoxylated Alcohol	68439-46-3	< 5%*
Sodium Citrate	68-04-2	< 5%*
Tetrasodium N, N-bis(carboxymethyl)-L-glutamate	51981-21-6	< 1%*
Sodium Carbonate	497-19-8	< 1%*
Citric Acid	77-92-9	< 1%*
Isothiazolinone mixture	55965-84-9	< 0.2%*
Fragrance	Proprietary Mixture	< 1%*
Colorant	Proprietary Mixture	< 1%*

\*specific percentages of composition are being withheld as a trade secret

## Section 4: FIRST-AID MEASURES

Inhalation:Not expected to cause respiratory irritation. If adverse effect occurs, move to fresh air.Skin Contact:Not expected to cause skin irritation. If adverse effect occurs, rinse skin with water.Eye Contact:Not expected to cause eye irritation. If adverse effect occurs, flush eyes with water.Ingestion:May cause upset stomach. Drink plenty of water to dilute. See section 11.

Most Important Symptoms/Effects, Acute and Delayed: None known.

Indication of Immediate Medical Attention and Special Treatment Needed, if necessary: Treat symptomatically

## Version No. 13000-14B Issue Date: September 13, 2014

Supersedes Date: January 7, 2014

OSHA HCS-2012 / GHS

# Section 5: FIRE-FIGHTING MEASURES

Suitable & Unsuitable Extinguishing Media: Specific Hazards Arising from Chemical: Special Protective Actions for Fire-Fighters: Use Dry chemical, CO2, water spray or "alcohol" foam. Avoid high volume jet water. In event of fire, fire created carbon oxides may be formed. Wear positive pressure self-contained breathing apparatus; Wear full protective clothing.

## See section 16 for NFPA rating.

# Section 6: ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures:** *For non-emergency and emergency personnel:* See section 8 – personal protection. Avoid eye contact. Safety goggles suggested.

Environmental Precautions: Do not allow into open waterways and ground water systems.

Methods and Materials for Containment and Clean Up: Dike or soak up with inert absorbent material. See section 13 for disposal considerations.

# Section 7: HANDLING AND STORAGE

**Precautions for Safe Handling:** Ensure adequate ventilation. Keep out of reach of children. Keep away from heat, sparks, open flame and direct sunlight. Do not pierce any part of the container. Do not mix or contaminate with any other chemical. Do not eat, drink or smoke while using this product.

**Conditions for Safe Storage including Incompatibilities:** Keep container tightly closed. Keep in cool dry area. Avoid prolonged exposure to sunlight. Do not store at temperatures above 109°F (42.7°C). If separation occurs, mix the product for reconstitution.

# Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure Limit Values:** No components listed with TWA or STEL values under OSHA or ACGIH.

Appropriate Engineering Controls: Showers, eyewash stations, ventilation systems

## Individual Protection Measures / Personal Protective Equipment (PPE)

Eye Contact:Use protective glasses or safety goggles if splashing or spray-back is likely.Respiratory:Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.Chin Contact:Use in well ventilated areas or local exhaust ventilations when cleaning small spaces.

Skin Contact: Use protective gloves (any material) when used for prolonged periods or dermally sensitive.

General Hygiene Considerations: Wash thoroughly after handling and before eating or drinking.

# Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Green Liquid	Partition Coefficient: n-octa	•		ned
Odor:	Added sassafras odor	Autoignition Temperature:		lammable	
Odor Threshold:	Not determined	Decomposition Temperatur	<b>e:</b> 109°F		
pH ASTM D-1293:	8.5 – 9.5	Viscosity: Like water			
Freezing Point ASTM D-1177:	0-3.33°C (32-38°F)	Specific Gravity ASTM D-891	l: 1.01 -	- 1.03	
Boiling Point & Range ASTM D-1	.120: 101°C (213.8°F)	VOCs: *	*Water & frag	grance exemption in	calculation
Flash Point ASTM D-93:	> 212°F	SCAQMD 304-91 / EPA 24:	0 g/L	0 lb/gal	0%
Evaporation Rate ASTM D-1901:	½ Butyl Acetate @ 25°C	CARB Method 310**:	2.5 g/L	0.021 lb/gal	0.25%
Flammability (solid, gas):	Not applicable	SCAQMD Method 313:	Not teste	d	
Upper/Lower Flammability or E	xplosive Limits: Not applicable	VOC Composite Partial Pres	sure: No	ot determined	
Vapor Pressure ASTM D-323:	0.60 PSI @77°F, 2.05 PSI @100°F	Relative Density ASTM D-40	17: 8.3	34 – 8.42 lb/gal	
Vapor Density:	Not determined	Solubility:	10	0% in water	

# Safety Data Sheet: Simple Green® All-Purpose Cleaner

Issue Date: September 13, 2014

Supersedes Date: January 7, 2014

OSHA HCS-2012 / GHS

# Section 10: STABILITY AND REACTIVITY

Version No. 13000-14B

Reactivity:	Non-reactive.
Chemical Stability:	Stable under normal conditions 70°F (21°C) and 14.7 psig (760 mmHg).
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Excessive heat or cold.
Incompatible Materials:	Do not mix with oxidizers, acids, bathroom cleaners, or disinfecting agents.
Hazardous Decomposition Products:	Normal products of combustion - CO, CO2.

# Section 11: TOXICOLOGICAL INFORMATION

Likely Routes of Exposure:	Inhalation -	Overexposure may cause headache.
	Skin Contact -	Not expected to cause irritation, repeated contact may cause dry skin.
	Eye Contact -	Not expected to cause irritation.
	Ingestion -	May cause upset stomach.

Symptoms related to the physical, chemical and toxicological characteristics: no symptoms expected under typical use conditions. Delayed and immediate effects and or chronic effects from short term exposure: no symptoms expected under typical use conditions. Delayed and immediate effects and or chronic effects from long term exposure: headache, dry skin, or skin irritation may occur. Interactive effects: Not known.

Numerical Measures of	<u>Toxicity</u>		
Acute Toxicity:	Oral LD <sub>50</sub> (rat) Dermal LD <sub>50</sub> (rabbit)	> 5 g/kg body weight > 5 g/kg body weight	
		Calculated via OSHA HCS 2012 / Globally Harmonized System of Classification and Labelling of Chemicals	
Skin Corrosion/Irritatio	n: Non-irritant per D	ermal Irritection <sup>®</sup> assay modeling. No animal testing performed.	
Eye Damage/Irritation:	Minimal irritant p	er Ocular Irritection <sup>®</sup> assay modeling. No animal testing performed.	
Germ Cell Mutagenicity	: Mixture does not	classify under this category.	
Carcinogenicity:	Mixture does not	Mixture does not classify under this category.	
<b>Reproductive Toxicity:</b>	Mixture does not	Mixture does not classify under this category.	
STOT-Single Exposure:	Mixture does not	Mixture does not classify under this category.	
STOT-Repeated Exposu	re: Mixture does not	Mixture does not classify under this category.	
Aspiration Hazard:	Mixture does not	classify under this category.	

# Section 12: ECOLOGICAL INFORMATION

**Ecotoxicity:** Volume of ingredients used does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of Chemicals.

Aquatic:Aquatic Toxicity - Low, based on OECD 201, 202, 203 + Microtox: EC\_{50} & IC\_{50} ≥100 mg/L. Volume of ingredients used<br/>does not trigger toxicity classifications under the Globally Harmonized System of Classification and Labelling of<br/>Chemicals.

Terrestrial: Not tested on finished formulation.

Persistence and Degradability:	Readily Biodegradable per OCED 301D, Closed Bottle Test
Bioaccumulative Potential:	No data available.
Mobility in Soil:	No data available.
Other Adverse Effects:	No data available.

# Section 13: DISPOSAL CONSIDERATIONS

**Unused or Used Liquid:** May be considered hazardous in your area depending on usage and tonnage of disposal – check with local, regional, and or national regulations for appropriate methods of disposal.

**Empty Containers:** May be offered for recycling.

Never dispose of used degreasing rinsates into lakes, streams, and open bodies of water or storm drains.

Issue Date: September 13, 2014

Supersedes Date: January 7, 2014

OSHA HCS-2012 / GHS

## Section 14: TRANSPORT INFORMATION

Version No. 13000-14B

U.N. Number:Not applicableU.N. Proper Shipping Name:Cleaning Compound, Liquid NOITransport Hazard Class(es):Not applicableNMFC Number:48580-3Packing Group:Not applicableClass:55Environmental Hazards:Marine Pollutant - NOTransport in Bulk (according to Annex II of MARPOL 73/78 and IBC Code):Unknown.Special precautions which user needs to be aware of/comply with, in connectionNone known.with transport or conveyance either within or outside their premises:Vince Name					
U.S. (DOT) / Canadian TDG: IMO / IDMG:	Not Regulated Not classified a		ICAO/ IAT ADR/RID:	A: Not classified as Haz Not classified as Haz	
Section 15: REGULATORY INFORMATION					
All components are listed on: TSCA and DSL Inventory.					
SARA Title III:Sections 311/312 Hazard Categories – Not applicable.Sections 313 Superfunds Amendments and Reauthorizations Act of 1986 – Not applicable.Sections 302 – Not applicable.					
<u>Clean Air Act (CAA):</u> Not applicable <u>Clean Water Act (CWA):</u> Not applicable					
State Right To Know Lists:California Proposition 65:Texas ESL:Ethoxylated Alcohol6843Sodium Citrate68-0Sodium Carbonate497-Citric Acid77-9	19-8		50 μg/m <sup>3</sup> short 50 μg/m <sup>3</sup> short	term term	
Section 16: OTHER INFORMATION					
<u>Size</u> 2 oz. Pump	<u>UPC</u> 043318130366	<u>Size</u>	w/ Dilution Bottle	<u>UPC</u> 043318000669	
2 oz. Pump	043318130300	1 Gallon 1 Gallon		043318000009	
4 oz. Pump	043318130014	1 Gallon	w/ Dilution Bottle	043318001383	
16 oz. Trigger	043318130021	1 Gallon	w/ Dilution Bottle	043318002021	
22 oz. Trigger	043318130229	1 Gallon		043318130052	
24 oz. Trigger, 12 per case	043318000034	1 Gallon	w/ Dilution Bottle, 112 pe	r case 043318480140	
24 oz. Trigger	043318000300	1 Gallon	w/ Dilution Bottle, 4 per d	ase 043318480416	
24 oz. Trigger	043318130137	1 Gallon	w/ Dilution Bottle, 24 per	case 043318480492	
32 oz. Trigger	043318000652	1 Gallon	w/laundry	043318002052	
32 oz. Trigger	043318130335	1 Gallon	w/ towel	043318001222	
67.6 oz	043318000393	140 oz.		043318001390	
67.6 07	042210120144	140	169 per case	042219561405	

140 oz., 168 per case

140 oz. w/ Dilution Bottle

1 Gallon w/ Dilution Bottle0433180005391 Gallon w/ Dilution Bottle043318000645

67.6 oz.

USA items listed only. Not all items listed. USA items may not be valid for international sale.

043318130144

043318561405

043318001468

Issue Date: September 13, 2014

**Consumer Product Safety Commission** 

OSHA HCS-2012 / GHS

# Section 16: OTHER INFORMATION - continued

#### NFPA:

Health - None Flammability – Non-flammable

Version No. 13000-14B

Stability - Stable Special - None

#### Acronyms

NTP	National Toxicology Program	IARC
OSHA	Occupational Safety and Health Administration	CPSC
TSCA	Toxic Substances Control Act	DSL

Prepared / Revised By: Sunshine Makers, Inc., Regulatory Department. This SDS has been revised in the following sections: **Revised SDS layout** 

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X	
	International Agency for Research on Cancer

**Domestic Substances List** 

# Appendix D Travel Plan



# Journey Management Plan

**Scope:** This JMP applies to all GHD vehicles assigned for the support of site operations, including company owned, rental, and personal use vehicles. All vehicle operators shall be responsible for ensuring their vehicles are maintained by and obeying all laws related to vehicle operation. This JMP is to be used in conjunction with a Driving JSA and a vehicle inspection checklist.

#### Vehicle Operator(s): GHD Staff

#### JMP Covers Dates of Travel: Ongoing

⊠ Routine Journey	□ Non-Routine Journey		
<b>Commencement Point:</b> GHD Albuquerque, NM Office	Destination Point: Project Site		
Estimated Miles: 14 miles	Estimated Drive Time: 16 minutes		
* This JMP will also apply to routes back to the GHD Offices. *			

Emergency Contact NumbersFire/Ambulance/Police/Highway Patrol: 911Designated Check-In ContactGHD Incident Reporting Hotline: 866 529-4886Designated Check-In Time:GHD RSHM: Matt Downing – 720-974-0949Roadside Assistance:GHD PM: Chrissi Ruby – 720-974-0969GHD Journey Manager: David BongaClient Contact: Becky Hesslen – 918-977-4511Field Personnel Cell Phone: Varies

Route and Rest Stop Details					
🛛 Maps Attached	🛛 GPS	planned to be used (	(does not replace requirement for map)		
Route (check all that app	ly)				
🛛 Highway	Busines	s	🛛 Rural	Planned Rest Stops: [detail]	
🛛 Country	🗌 Residen	tial	☐ Isolated	Night Driving: 🗌 Yes 🗌 No	

Locations to be avoide rates)	d or where extra precautions are to be taken (e.g., roadwork or known locations with high accident
NA	

#### Ingress/Egress Considerations for Destination Point (e.g., any specific directions)

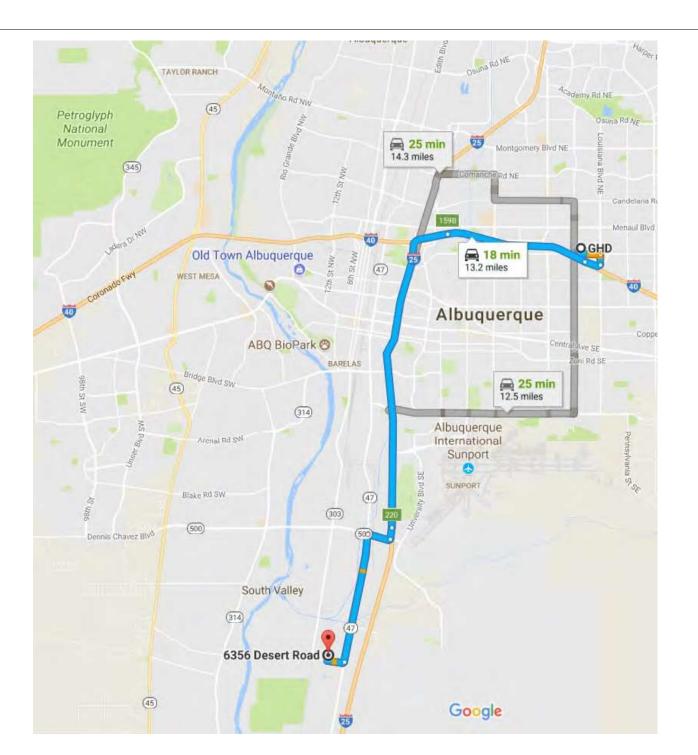
NA



# Journey Management Plan

Additional Risk Reduction Measures for Non-Routine Journey (isolated, severe weather, long distances (300+ miles), dangerous terrain

NA



# Appendix E Stakeholder Engagement

# **Stakeholder Communications Plan**

Site Name	E. Hobbs Junction	Site #	3373
Address	Lea County, NM (Sec 08, T19S, R38E)	Site Manager	Becky Hesslen

#### **Team Members**

RM, Program Manager: Becky Hesslen, 918-977-4511 RM, Western Region Manager: Dan Fischman, 562-290-1553 Consultant: GHD Services (GHD): Chrissi Ruby, 720-974-0969

#### Brief Written Site Summary (Site History, Overview, Background)

Project activities commenced at the Site in January 2000, following the discovery of a release of crude oil from a gathering line at the East Hobbs Junction. Assessment and remediation activities have been conducted at the Site to define and address the crude oil impacts including the installation of a comprehensive soil and groundwater remediation system. The remediation system installation consisted of a SVE system, an air sparging, and expanding the existing crude oil recovery system.

Higgins and Associates, L.L.C. (H&A) of Centennial, Colorado performed the installation of the remediation system, initial startup, procedures, system operation and maintenance, and required Site monitoring activities until September 2003. One September 2003, Tetra Tech assumed operation and maintenance of the system. On August 5, 2008, the SVE and air sparging systems were converted into a bioventing system utilizing electronic timers to cycle the periods of operation to promote oxygen enhancement in the vadose zone and encourage biodegradation. The skimmer pumps have been removed from all the monitoring wells except MW-2 and MW-9.

In August 2011, GHD assumed management of the Site. Periodic operation and maintenance of the remediation system and an annual groundwater monitoring and sampling schedule is in place. In 2014, GHD began performing MDPE events to assist in expediting the recovery of product at the Site. Additional MDPE events are taking place in early 2015.

# **Overall Communications Strategy**

Minimize public concern by communicating directly to affected stakeholders, as necessary. The objectives of this plan are to identify potential stakeholders, their potential issues/concerns, and identify communication techniques appropriate for each stakeholder.

Phillips66 will be notified verbally and/or notified in writing (e.g., email) of ongoing investigations and remediation activities that require probing, digging, blasting, and/or any other earth moving activities.

Potential stakeholders at the E. Hobbs Junction site include:

- Regulators (i.e., New Mexico Oil Conservation Division (NMOCD)),
- Phillips66 Pipeline Company

- Affected residents and property owners, and
- Near neighbors.

Stakeholder: Regulatory Authority: NMOCD, Mr. Tomas Oberding

The GHD Project Manager or Project Coordinator will initiate and continue coordination with NMOCD and comply with the regulatory requirements. Sustain a positive relationship with the agency, maintain regulatory compliance, and meet regulatory deadlines. NMOCD will be notified verbally and/or notified in writing (e.g. email) of ongoing investigations and remediation activities with Phillips66 approval. Deadline extensions need to be obtained in advance. Any action items or questions/comments from the NMOCD will need to be returned and/or addressed promptly. Consultant reports and documents should always be professional, accurate, complete, and timely. Final documents approved by Phillips66 will be submitted to the NMOCD. GHD has the primary responsibility to load reports and correspondence into livelink.

# Public Messages (standby statements)

- 1. Phillips66 is working cooperatively with the NMOCD to investigate any impacts to soil or groundwater in this area.
- 2. Once we complete our local assessment, we will work with regulators to determine if any additional monitoring is necessary.
- 3. Any work will be done with oversight by NMOCD.
- 4. Our primary concern is the well being of local property owners/residents and we will keep you updated on the progress of our work.
- 5. Phillips66 is committed to safe, reliable, environmentally responsible and sustainable operations.
- 6. If you have any further questions or concerns, please contact Becky Hesslen at 918-977-4511.

Notes

Potential Stakeholders (Names and

**Communications Vehicles** 

Responsible

contact information for property owners, residents, businesses, schools, regulators government officials)

Mr. Tomáš Oberding New Mexico Oil Conservation Division (NMOCD) 1220 South St. Francis Drive South Santa Fe, NM 87505 (505) 476-3403 575-370-3180 (emergency-cell) E-Mail: tomas.oberding@state.nm.us Regulatory Authority	<ul> <li>Letters</li> <li>Flyers</li> <li>Brochures</li> <li>Public Meetings</li> </ul>	<ul> <li>Phone Conversations</li> <li>Face-to-Face Meetings</li> <li>Access Agreements</li> </ul>	GHD, RM Program Manager
Occidental Permian LTD.	Letters	Phone Conversations	GHD, RM
1017 W. Stanolind		Secto-Face Meetings	Program
Hobbs, NM 88240		$\square$ Access Agreements	Manager
,			
505-397-8203	Public Meetings		

Date Created 01/03/2007

Date Last Updated 03/19/15

#### Phillips 66 contact information (only give out if previously approved)

Program manager

Phillips 66 issues management adviser

Remediation Management safety principles

# At Phillips 66, we take the time to work safely, every job, every day.

- Report to work physically rested and mentally alert.
- Observe and coach your co-workers to ensure that they work safely.
- Do not improvise or take short cuts follow procedures.
- There is zero tolerance for willful unsafe actions.

# • Stop all unsafe work.

CSH 12-1645

6-2012



# Stakeholder Communications Guide for Contractors

As someone working at a Phillips 66 remediation site on a daily basis, you play a critical role in our relationships with stakeholders. We expect you to positively represent Phillips 66, as well as your own company.

The following guidelines are provided as a reference to help you effectively engage stakeholders at Phillips 66 remediation sites.

# Stakeholder communications protocol

- Move to a safe area.
- Keep conversation brief. Avoid providing interpretations or committing to dates or deadlines without clearance from Phillips 66.
- · Get essential information, including

name and phone number, and assure the stakeholder someone from Phillips 66 will contact them.

• Immediately forward the information to your Project Manager or Phillips 66 Program Manager.

#### Tips for effective communication

- Be respectful, polite and calm.
- Don't lose your temper.
- Listen to the stakeholder's questions and concerns.
- Speak clearly and use simple, nontechnical terms.
- Develop a short script and use it every time.

#### Sample script

• If you would like information, I can take your name and number and

forward that to the project manager/appropriate person.

- I assure you that someone will contact you promptly and respond to your questions.
- I apologize that I can't talk longer because our team needs to complete its work here.
- If necessary, you may add: Our company is doing some soil testing/groundwater testing/ cleanup work for Phillips 66.

#### If approached by the media

- Do not engage in conversations with reporters or give statements or interviews.
- Politely inform the reporter that you are not a spokesperson, and refer them to your Phillips 66 Program Manager.

# **Stakeholder Communications Plan**

Site Name	P66 Albuquerque Products Terminal	Site #
Address	6356 Desert Road, Albuquerque, NM	Program Manager Chrissi Ruby

**Team Members** Becky Hesslen (P66) Jeff Walker, Cassie Brown, Christine Mathews, Cale Kanack (GHD), Justin Ball (NMED)

**Brief Written Site Summary** (Site History, Overview, Background) Bulk fuel terminal,

#### **Overall Communications Strategy**

Do not engage the general public if at all possible. Direct questions to Becky Hesslen, or Jeff Walker.

# Public Messages (standby statements)

Phillips 66 is working cooperatively with the NMED to investigate whether historical operations from a local fuel terminal may have impacted the soil or groundwater in this area.

Once we complete our local assessment, we will work with regulators to determine if any corrective action is necessary.

 $\boxtimes$  Any work will be done with oversight by NMED.

Our primary concern is the well being of local property owners/residents and we will keep you updated on the progress of our work.

Our company is committed to safe, reliable, environmentally responsible and sustainable operations.

# 

#### Notes

Engagement with the general public is highly unlikely due to most monitor well locations inside the terminal fenceline.

#### Potential Stakeholders (Names and

**Communications Vehicles** 

Responsible

contact information for property owners, residents, businesses, schools, regulators government officials)

Becky Hesslen – P66 Justin Ball - NMED	<ul> <li>Letters</li> <li>Flyers</li> <li>Brochures</li> <li>Public Meetings</li> <li>Letters</li> <li>Flyers</li> <li>Brochures</li> <li>Public Meetings</li> </ul>	<ul> <li>Phone Conversations</li> <li>Face-to-Face Meetings</li> <li>Access Agreements</li> <li>Phone Conversations</li> <li>Face-to-Face Meetings</li> <li>Access Agreements</li> </ul>	Jeff Walker Jeff Walker Becky Hesslen
Deanna Miglio – Bernalillo County Rick Heckes - Bernalillo County	Letters     Flyers     Brochures     Public Meetings	Phone Conversations     Face-to-Face Meetings     Access Agreements	Jeff Walker Becky Hesslen
	<ul> <li>Letters</li> <li>Flyers</li> <li>Brochures</li> <li>Public Meetings</li> <li>Letters</li> <li>Public Meetings</li> <li>Letters</li> <li>Public Meetings</li> </ul>	<ul> <li>Phone Conversations</li> <li>Face-to-Face Meetings</li> <li>Access Agreements</li> </ul>	

Date Created 7/22/2015

Date Last Updated 7/15/2015

Appendix F P66 Contractor Safety Requirements (Safety Handbook)



Document Title:

**Contractor Safety Requirements** 

# CONTRACTOR SAFETY REQUIREMENTS

TABLE OF CONTENTS

1.0		SCOPE AND APPLICABILITY	1
2.0		SAFETY PHILOSOPHY – FIVE KEY PRINCIPLES	1
3.0		HEALTH AND SAFETY PLAN	1
4.0		EMERGENCY RESPONSE	2
5.0		INCIDENT REPORTING	2
	5.1	VERBAL REPORTING TO PROGRAM MANAGER	2
	5.2	HIGH RISK INCIDENTS IMMEDIATE REPORTING	3
	5.3	WORKHOUR REPORTING AND ISNETWORLD MEMBERSHIP	4
6.0		GENERAL HEALTH AND SAFETY	4
7.0		WORKER HEALTH AND HYGIENE	6
8.0		SAFETY TRAINING	6
	8.1	HAZWOPER TRAINING	7
9.0		VACUUM TRUCK OPERATIONS	7
10.0		WASTE MANAGEMENT	7
11.0		WORK PERMITS	8
	11.1	HOT WORK	8
	11.2	CONFINED SPACE ENTRY	8
12.0		ENERGY ISOLATION	8
13.0		LONE WORKER SAFEGUARDS	9
14.0		REMEDIATION SYSTEM OPERATION	9
15.0		OCCUPATIONAL MEDICAL CASE MANAGEMENT	9
16.0		SHORT SERVICE EMPLOYEE PROGRAM	9
17.0		SUBCONTRACTOR QUALIFICATION	10
18.0		FATIGUE MANAGEMENT	10
19.0		RECORDKEEPING AND AUDITING	10
20.0		SPECIFIC SAFETY PROCEDURES	11
	20.1	EXCAVATION AND BOREHOLE CLEARING	11
	20.2	SAFETY KNIFE	12
	20.3	SAFE DRIVING	14
	20.4	DRILLING	14
	20.5	HAND PROTECTION	16
	20.6	JOB HAZARDS ANALYSIS	21
	20.7	AIR EXCAVATION	27
	2.0 3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0 13.0 14.0 15.0 16.0 17.0 18.0 19.0	2.0         3.0         4.0         5.0         5.1         5.2         5.3         6.0         7.0         8.0         8.1         9.0         10.0         11.1         11.2         12.0         13.0         14.0         15.0         16.0         17.0         18.0         19.0         20.0         20.1         20.2         20.3         20.4         20.5         20.6	2.0SAFETY PHILOSOPHY – FIVE KEY PRINCIPLES3.0HEALTH AND SAFETY PLAN4.0EMERGENCY RESPONSE5.0INCIDENT REPORTING5.1VERBAL REPORTING TO PROGRAM MANAGER5.2HIGH RISK INCIDENTS IMMEDIATE REPORTING5.3WORKHOUR REPORTING AND ISNETWORLD MEMBERSHIP6.0GENERAL HEALTH AND SAFETY7.0WORKER HEALTH AND HYGIENE8.0SAFETY TRAINING8.1HAZWOPER TRAINING9.0VACUUM TRUCK OPERATIONS10.0WASTE MANAGEMENT11.1HOT WORK11.2CONFINED SPACE ENTRY12.0ENERGY ISOLATION13.0LONE WORKER SAFEGUARDS14.0REMEDIATION SYSTEM OPERATION15.0OCCUPATIONAL MEDICAL CASE MANAGEMENT16.0SHORT SERVICE EMPLOYEE PROGRAM17.0SUBCONTRACTOR QUALIFICATION18.0FATIGUE MANAGEMENT19.0RECORDKEEPING AND AUDITING20.1EXCAVATION AND BOREHOLE CLEARING20.2SAFETY KNIFE20.3SAFE DRIVING20.4DRILLING20.5JOB HAZARDS ANALYSIS

PHILLIPS	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 1 of 27

# 1.0 SCOPE AND APPLICABILITY

The requirements stated herein are applicable to any individual or organization contracted or subcontracted to perform work on behalf of Phillips 66 Remediation Management, referred to as the Company throughout this document. Note that the Company may conduct remediation on retail properties branded under different brands (Phillips 66, 76, Circle K, etc.)

If a requirement cannot be met in a particular situation, a variance must be approved by the Company Program Manager after review of compensating safety measures.

# 2.0 SAFETY PHILOSOPHY – FIVE KEY PRINCIPLES

The Five Key Safety Principles of Remediation Management are:

- 1. Report to work physically rested and mentally alert.
- 2. Observe and coach your co-workers to ensure that they work safely.
- 3. Do not improvise or take short cuts follow procedures.
- 4. There is zero tolerance for willful unsafe actions.
- 5. Stop all unsafe work.

All injuries, losses and environmental releases are preventable and contractor personnel must work toward the goal of zero incidents. Workers must carry a Personal Safety Commitment Card.

Contractors are required to maintain a safe and healthful workplace, and to identify and mitigate workplace hazards. Requirements contained in this document are minimum requirements. If other measures are required to maintain a safe workplace, it is the responsibility for contractors to identify and implement protective measures.

#### At Phillips 66 we take the time to work safely, every job, every day.

# 3.0 HEALTH AND SAFETY PLAN

Contractor shall prepare a written Health and Safety Plan (HASP) which complies with OSHA 1910.120 (b) prior to commencement of work on a Company job site. The HASP must be available on-site for review. The HASP must be uploaded into Livelink as a project document in the site "Guidance" folder.

The HASP must be reviewed periodically and updated as needed to reflect current conditions and site hazards. The HASP must address site security.

The HASP must meet the requirements of federal and state regulations, industry standards, and accepted safety practices. When working within a Company operating facility, contractor shall comply with all written policies and procedures specific to that facility (emergency management, lockout/tagout, work permits, etc.). The Contractor must create a "bridging document" that defines the policies, programs, and procedures that will be enforced for the specific job/project.

PHILLIPS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 2 of 27

The operating facility/business unit may have a process that requires business unit approval of the bridging document prior to commencement of work. Bridging documents may also be valuable at unmanned operating facilities, such as pump stations and storage facilities, and as requested by the Program Manager.

# 4.0 EMERGENCY RESPONSE

The HASP for each site must include an emergency response plan.

For work at operating facilities, contractors must have the appropriate training with regard to their conduct during an operating facility emergency.

During the emergency response or incident, the contractor must make every effort to preserve evidence that may be needed in the investigation of the incident.

The contractor shall notify the Company Program Manager immediately upon the initiation of postaccident substance testing. If an incident or near-miss occurs, and there is a question regarding the need for a substance test, the Program Manager should be consulted to assist in the decision. Risk Rank III or Higher incidents/near-miss automatically trigger substance abuse testing.

# **5.0 INCIDENT REPORTING**

An incident is an event where a site worker suffers a work-related injury or illness, property is damaged, an unauthorized spill or release occurs or there is non-compliance with Federal or Environmental permits or regulations.

The Contractor shall be knowledgeable of environmental regulatory reporting requirements (i.e. spill and release reporting). Contractor will not make reports to a regulatory agency unless specifically authorized by the Company.

Contractor shall promptly report all Health, Safety and Environment (HSE) incidents to Company as described below (end of document): <u>See RM Notification Tree</u>

# 5.1 VERBAL REPORTING TO PROGRAM MANAGER

Contractor shall immediately notify the Program Manager of the following incidents:

- Any injury or illness to an employee, contractor, or member of the public regardless of severity
- Chemical exposure incident
- Permit exceedance or non-compliance event
- Any vehicle accident
- Property damage
- Fire
- Odor Complaint
- Hostile encounter with a stakeholder

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 3 of 27

- Any personnel fall on same level or from elevation, regardless of injury
- Falling objects from greater than 4 feet that did or could have resulted in injury or property damage
- Incidents and near misses with potentially significant or high negative consequences.
- Security breaches, theft, trespass, assault

HSE incidents/Near Misses with a Risk Rank of II or higher must be entered into the Company database (IMPACT) by the Program Manager on the same day in which the incident occurs, thus Contractors must report incidents promptly. See Risk Matrix and Incident Risk Ranking Tables

# 5.2 HIGH RISK INCIDENTS – IMMEDIATE REPORTING

Contractor shall immediately report by phone to the Company representatives (Program Manager and Site Business Unit Representative if work is within Company operating facility) the following incidents or any incident listed as IV in the Risk Ranking Tables:

- Any incident involving company personnel, contractor employees and the public that results in a fatality, multiple injuries/illnesses, or a serious individual injury requiring overnight hospitalization.
- Spills or releases:
  - To environmentally sensitive areas such as national parks and designated wildlife habitats and refuges.
  - Greater than 5 barrels to any navigable or recreational waterway
  - That causes closure, stoppage or rerouting of traffic on a public road or waterway.
- Property damage events (examples include fires, explosions, acts of nature, vandalism, theft, etc.) exceeding or likely to exceed \$500,000 (USD) gross in estimated damages.
- Any incident which requires evacuation of company employees or contractor personnel beyond the facility.
- Any incident that requires the evacuation or sheltering-in-place of the public.
- Any situation that should be brought to the attention of corporate management due to the actual, or potential, impact on the company such as:
  - Serious transportation incidents such as derailments involving Phillips 66 products that result in the closure of a public road, and/or rerouting or stoppage of traffic.
  - Acts of terrorism (e.g., bomb threats, sabotage, kidnapping, employee violence, etc.)
  - ♦ Confrontations with anti-industry groups that could attract media attention.
  - Multiple complaints of acute illness by third parties allegedly caused by *Phillips 66 Company (including affiliates)* operations or products.
  - ♦ Any situation that attracts or is likely to attract adverse media attention.

In the event the Company Program Manager is not <u>immediately</u> available by telephone, then the RM Safety Director should be contacted. If the Safety Director cannot be

Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 4 of 27

contacted, then the contractor should attempt to notify the Region Manager or any member of the Phillips 66 Leadership Team.

The contractor must continue to call until <u>voice contact</u> is accomplished with the Program Manager, Region Manager or a member of the RM Leadership Team. Leaving a voice message does not constitute voice contact.

#### 5.3 WORK HOUR REPORTING AND ISNETWORLD MEMBERSHIP

RM requires its direct contractors maintain active membership in the ISNetworld web-based contractor database service. Contractors must submit incident statistics, work hours and program updates to ISNetworld. Work hours must be reported by close of business on the 8<sup>th</sup> day of the following month.

# 6.0 GENERAL HEALTH AND SAFETY

- 6.1 Contractor shall comply with local, state and federal occupational safety and health regulations and maintain required records.
- 6.2 Contractor shall establish a work zone as appropriate to protect site workers and the public. Contractor shall place suitable barriers at a minimum height of 28 inches, where the potential for site visitation by the public or other pedestrians exists. Minimize the number of people in the work zone.
- 6.3 Required PPE for each job site must be specified in the HASP. Contractors must wear proper work attire for the task. Long pants are required. Long-sleeved shirts are highly recommended to better protect arms from cuts and scratches. Many operating facilities have site-specific PPE requirements, such as flame retardant clothing. These shall be specifically addressed in the HASP and, if applicable, in the bridging document.
- 6.4 Contractor is responsible for fire prevention in the work area.
- 6.5 Contractor is responsible for providing or arranging emergency medical and first aid care for its personnel, and any follow-up care which may become necessary. Refer to Section 15.0 Occupational Medical Case Management.
- 6.6 Contractor personnel are subject to substance testing programs as required under the Master Services Agreement. Workers taking medication which may impair their physical and mental ability must be evaluated to determine if they can perform safety-sensitive work.
- 6.7 Provisions must be made to communicate safety and health requirements to non-English speaking workers.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 5 of 27

- 6.8 Only use tools that are designed for the desired purpose. After-market modifications to tools (i.e. specialized drilling tools or "fishing" tools) must be identified prior to commencement of work. Documentation must be available to show that the modification was approved by a qualified individual with expertise to evaluate the integrity of the modification.
- 6.9 Tools and equipment that do not meet minimum safety standards are not allowed on the jobsite.
- 6.10 Whip checks or anti-whip devices must be in place on all pressurized hose lines.
- 6.11 During the daily equipment check or before use, verify that emergency shut-off devices are functioning properly.
- 6.12 Worker(s) must not move a load unassisted if the weight and bulk exceeds the capability of the worker(s). Loads greater than 50 pounds should not be moved by a single person.
- 6.13 Contractor is responsible for providing Safety Data Sheets (SDS) (also known as Material Safety Data Sheets or MSDSs) for all hazardous substances brought on site by the contractor and keeping them in a location available to site workers. SDSs are to be utilized for evaluating potential hazards in the workplace. Chemicals brought on to Company operating facilities may be subject to additional approval by the Business Unit.
- 6.14 Contractor must comply with OSHA Fall Protection Standards and provide fall protection for workers at heights greater than 6 feet above ground level. Contractors must provide the OSHA-required training to its employees prior to using aerial lifts. 100% tie-off is required for all work from "tank builders scaffolds" greater than 6 feet above grade. (The term "tank builders scaffold" is defined in OSHA 1926.450(b) and meeting the specifications of OSHA 1926 Subpart L Appendix A.2 (z).)
- 6.15 Contractors must comply with OSHA standards for working in excavations greater than 4 feet below ground level.
- 6.16 Contractor shall ensure no open excavations are left unattended in public or private roadways, trails or walkways unless acceptable markings, barricades and detours are provided and approval has been granted from the property owner before leaving the site.
- 6.17 Contractor shall identify overhead hazards and comply with required procedures and regulations for working or operating equipment in proximity to overhead power lines and obstructions.
- 6.18 Contractors are required to safely and responsibly manage exposure to bio-hazards (e.g. insects, vegetation, and animals), sharps (e.g. used hypodermic needles and blades) and personal security threats that may be present at project sites.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 6 of 27

- 6.19 Vehicles may be left running only when operating auxiliary equipment or lights, and when the driver can ensure the vehicle is secure with the transmission in park or neutral, the parking brake set and the wheels chocked where required or deemed necessary.
- 6.20 The possession of cameras or explosives without authorization from the Company representative is prohibited. Firearms are not allowed on a Company site.

# 7.0 WORKER HEALTH AND HYGIENE

Contractor must identify, evaluate and control potential workplace health hazards.

Each Contractor must develop and implement a written Exposure Assessment Plan and strategies to minimize its employees' risk of exposure to health hazards. The plan shall be reviewed and revised periodically to reflect changes in work environment. The Exposure Assessment Plan shall address the following:

- Identification of agents/stressors that may present adverse health risk factors to workers;
- Identification of work groups and/or tasks with potential for exposure;
- A qualitative methodology for evaluating exposure potential or risk factor and prioritizing for quantitative evaluation as needed for further risk assessment;
- Sampling strategies and data evaluation methods used for quantitative assessments addressing who, what, when, and at what frequency, based on qualitative assessments and prior exposure monitoring;
- Contractor employees will be required to participate in Company industrial hygiene sampling programs, where applicable.

Contractor will identify employees to be included in medical surveillance programs as determined by the Exposure Assessment Plan. The Contractor must ensure that physical examinations required by regulation and/or company program are offered to their employees.

#### 8.0 SAFETY TRAINING

Each site worker is to view the RM Basic Safety video initially before reporting to work at a Company site and then, at a minimum, once per year thereafter.

Contractor personnel shall be instructed in incident/injury reporting procedures.

Contractor shall ensure that personnel conducting work at a Company operating facility have completed the required site-specific safety training and fully understand the policies and procedures.

Contractor shall ensure personnel are familiar with all types of warning alarms and emergency procedures at the job site.

Remediation Management	Org Title:	HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title:	Contractor Safety Requirements	Page 7 of 27

# 8.1 HAZWOPER TRAINING

Specific training requirements apply to operations which involve a potential for worker exposure to hazardous substances, including hazardous waste, as specified by 29 CFR §1910.120 Hazardous Waste Operations and Emergency Response (HazWOpER). Sites covered by this rule include:

1. Hazardous substance response operations under CERCLA, including any initial investigations of the site prior to identification of exposures.

2. Corrective actions involving cleanup conducted under RCRA.

3. Operations at a State or local government designated site.

4. Operations involving storage, treatment, and disposal facilities regulated by 40 CFR §§264 and 265 pursuant to RCRA.

5. Emergency response operations regardless of location when there has been a release or substantial threat of release of hazardous substances.

Contractors who enter a hazardous waste site must recognize and understand the health and safety hazards associated with the cleanup activity. The level of training provided must consist of the following:

- Be consistent with the worker's job functions and responsibilities
- Identify toxicity of the materials and the levels of potential exposure
- Emergency preparedness.

Refresher training required by §1910.120 must be completed before the end of the twelfth month following initial training or the previous refresher training.

# 9.0 VACUUM TRUCK OPERATIONS

Vacuum truck operators must ensure that the truck and hoses are properly bonded and grounded prior to initiating vacuum operations.

Vacuum truck operators must ensure that the material(s) to be collected are compatible with residual materials that may already be in the truck or the truck must be washed prior to use. Mixing some incompatible liquids may produce fires, explosions and/or create toxic vapors. Flammable and combustible materials may also be ignited by static electricity.

Hydrocarbons and other vapors created by the vacuum pump exhaust shall be vented away from the work area and away from areas where people are present. In some locations, vapors must be controlled according to air emission regulations.

# **10.0 WASTE MANAGEMENT**

Proper management of waste is critical to project management success. Contractors should be familiar with the requirements of the Company Waste Management Processes.

Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 8 of 27

#### 11.0 WORK PERMITS

Contractor shall have written programs that comply with OSHA regulations to safely address the dangers and hazards of working in confined spaces and conducting hot work.

A work permit shall be obtained from an authorized permit writer when required by a Company facility or operating department. Note: the permit requirements may be different in facilities/operating areas.

#### 11.1 HOT WORK

Hot work is work that requires electric or gas welding, flame cutting, any non-intrinsically safe electrical equipment, and other work equipment capable of producing flames, sparks, or ignition sources.

#### **11.2 CONFINED SPACE ENTRY**

A Confined Space is a space that:

1) Is large enough and so configured that an employee can bodily enter and perform assigned work; AND

2) Has limited or restricted means for entry or exit;

AND

3) Is not designed for continuous employee occupancy.

In addition to the criteria listed above, a Permit-Required Confined Space means a confined space that has one or more of the following characteristics:

1) Contains or has a potential to contain a hazardous atmosphere

2) Contains a material that has the potential for engulfing an entrant

3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward to a smaller crosssection, or

4) Contains any other recognized serious health hazard.

All confined spaces must be evaluated to determine if the hazard presents special precautions that are to be specified in a confined space entry permit. Generally, depressions and excavations of depth less than 4 feet are not considered confined spaces.

#### **12.0 ENERGY ISOLATION**

Contractors are responsible to provide a "lock, tag, and try" or "lock out - tag out" (LOTO) program in accordance with the OSHA standard (29 CFR 1910.147). Contractors shall verify personnel (including subcontractors) involved in LOTO are trained and qualified for such work. Contractor shall comply with any site specific LOTO requirements, which shall be specifically addressed in the HASP and if applicable, in the bridging document.

Contractor shall ensure the electrical lines, air lines, gas lines or other lines containing hazardous materials or energy, shall be rendered safe by emptying, purging, disconnecting or other means before work may begin.

Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 9 of 27

# 13.0 LONE WORKER SAFEGUARDS

Contractor shall provide a lone worker program that addresses personal safety, security, and communications to be utilized when working alone. No worker should be left alone without means of quickly summoning help should the worker become incapacitated due to injury or illness.

Contractors must carry some form of identification with them on their person and in vehicles (company identification badge, driver's license, etc.).

#### 14.0 REMEDIATION SYSTEM OPERATION

Remediation equipment must be maintained to maximize equipment reliability and operating integrity. An effective program will prevent the uncontrolled release of materials and minimize the potential for significant HSE impacts while maximizing operating reliability. Refer to the Asset and Operating Integrity Program requirements.

#### 15.0 OCCUPATIONAL MEDICAL CASE MANAGEMENT

Contractors must have a comprehensive process for managing actual or suspected work-related injuries and illnesses. The program must include

- A working relationship with an occupational injury management service.
- Medical care when an injury or illness is suffered in the workplace.
- If treatment beyond first aid is required, transport of workers with non-life threatening injures to an approved occupational health clinic, if one exists in the area. The location of the occupational health clinic and the location of the hospital must be identified in the site-specific HASP.
- Accompaniment of injured workers to clinic or health care facility by a supervisor or safety professional.
- Worker training on the importance of prompt incident reporting and recordable injury criteria versus first aid treatment.

#### 16.0 SHORT SERVICE EMPLOYEE PROGRAM

Contractor must have a mentoring program for workers new to the worksite. A mentor can effectively demonstrate and coach less experienced workers in the safe and proper operation of equipment and execution of project activities. A worker is generally considered a Short Service Employee if he/she has less than 6 months experience with his/her present employer, or in his/her present role. A mentoring system must be implemented to provide guidance to Short Service Employees and assist with their development.

Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 10 of 27

# **17.0 SUBCONTRACTOR QUALIFICATION**

Requirements in this handbook also apply to subcontractors working on Company sites. As such, the contractor is required to evaluate certain safety programs of proposed subcontractors for adequacy. Site workers are expected to perform in a manner consistent with the Company safety objectives, policies, and procedures.

# **18.0 FATIGUE MANAGEMENT**

Working at the upper limits of hours per day and/or consecutive days is not sustainable and may lead to fatigue-related incidents. The contractor must assess the potential for worker fatigue when planning shift length and work set duration.

Shift length. Under normal conditions, shift length should not exceed 12 hours. Program pre-approval is required for shift time in excess of 14 hours. Shift length includes time traveling to the site if travel is within the scope of work

A work shift that begins after 8:00 pm is limited to 10 hours unless a longer shift length is preapproved by the Program Manage

Work sets (consecutive days or nights). Under normal conditions, the number of consecutive days worked must not exceed 14. The Program Manager may approve a work set greater than 14 days after review of a written variance request that considers the tasks to be performed, the types of errors that may occur from fatigue, the consequences of these errors, and mitigating measures to reduce errors and/or consequences. Program Managers should discourage performance of high risk/high consequence tasks by workers near the end of extended shifts or extended work sets.

When a work set is 14 days or greater, a minimum of 36 hours time off must be given prior to starting a new work shift.

# **19.0 RECORDKEEPING AND AUDITING**

Contractor shall furnish upon request documentation for all HSE required training, including documentation that site workers have viewed the RM Basic Safety Orientation video within the previous 12 months.

Managing contractors must perform a minimum of one HSE audit per year at each active site; correct deficiencies found, and report corrective actions and deficiencies to the Program Manager. Contractor must use some method to track non-conformances to completion if the item cannot be corrected immediately when found.

Every site for which a construction, operating, or discharge permit has been issued by a governmental agency must be audited for permit compliance. The managing contractor is required to maintain a checklist of permit requirements for each facility. The contractor must submit a report attesting to permit compliance annually for each site they manage. Any permit or regulatory non-

Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 11 of 27

compliance must be reported to the Program Manager and recorded in the IMPACT Compliance Audit module by the Program Manager.

# **20.0 SPECIFIC SAFETY PROCEDURES**

Contractors must follow the specific safety procedures in this section.

# 20.1 EXCAVATION AND BOREHOLE CLEARING

Prior to any work below grade, the Contractor Project Manager is responsible for:

- Conducting investigative and property inspection activities to determine the proposed physical limits of the planned work. As-built drawings of underground utilities and structures and interviews with knowledgeable personnel should be utilized to obtain information about underground structures. Operating facilities must be consulted for concurrence with work plans. Operating facilities may have additional requirements and permitting systems that must be considered prior to work.
- Reviewing the proposed work plan with the RM Program Manager.
- Obtaining regulatory permits and maintaining valid permits for the duration of the project.
- Contacting the public utility line locator ("One Call" Notification). The Project Manager
  must confirm that all entities identified by the public utility line locator have responded. If
  a response is not received, other means must be used to assure that no active utilities are
  present. Many public utilities will not mark lines on private property. Use of a private
  utility line locator or geophysical technology is not required, but should be used where
  warranted by risk.
- Notifying property owners and/or tenants according to the provisions of the applicable access agreement.

# GENERAL REQUIREMENTS

Physically clearing to expose subsurface features to the perimeter and planned depth of an excavation is not required but should be considered if warranted by risk. Methods used to remove concrete or other surface cover should consider the potential for encountering subsurface features.

A concrete saw must be operated according to the operation manual. The blade's features and specifications must match the sawing operation. Inspect blade prior to use. Do not use a blade with any cracks, discoloration or missing segments. Apply coolant as required during operation and do not remove the blade from the cut line until it has stopped spinning.

BUILLIDE	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 12 of 27

Open holes must be covered or barricaded when left unattended or overnight. Operating facilities may have additional requirements for unattended boreholes or excavations.

#### <u>Boreholes</u>

Field crews must immediately stop work and reevaluate the work plan if unexpected fill material or structures are encountered. On operating sites, notify the Operating Facility Contact. If damage has occurred, notify the Program Manager.

All boreholes and sampling points must be cleared using air knife, hydro-excavation or vacuum extraction. Use of hand augers is permitted only after a variance request has been submitted and approved by the RM Program Manager. Justification and compensating measures must be included in the variance request.

Pre-clear holes to 120% of the drill diameter to a minimum depth of 5 feet below ground surface. Consider pre-clearing to greater depths in close proximity to process piping such as loading racks.

Locate boreholes a minimum distance of 5 feet perpendicular from utility mark-out lines.

# 20.2 SAFETY KNIFE

#### 20.2.1 Definition

Fixed Open Blade Knife (FOBK) – A hand tool that has an exposed, prominent, sharp-edged blade that is fixed, or can be held/locked into a fixed position. Note that machetes, hatchets and axes are examples of FOBKs.

Safety Knife – A hand tool that has an automatically retractable blade or a blade that is shielded to protect a body part from contact with the blade.

#### 20.2.2 Tool Selection and Use

Use of shears or scissor-type cutter is preferred over use of a safety knife. Multipurpose shears come in a wide variety of shapes and sizes and can perform virtually all the same cutting tasks as a knife, but with a lower degree of risk.

In choosing a safety knife, preference should be given to the tool that is designed such that the auto-retractable feature cannot be overridden. Do not disable or disconnect the safety feature of a safety knife. If the safety feature of the knife is broken or no longer functioning properly it must be removed from service.

Always cut away from the body. When cutting right to left, use your left hand. When cutting left to right, use your right hand. If possible, use a vise or clamp to hold the item to be cut instead of attempting to hold it with your hands. Look for pinch points when using shears or cutting devices.

PHILLIPS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 13 of 27

#### 20.2.3 Requirements

No Fixed Open-Bladed Knife may be used on an RM worksite. To deter inadvertent use, FOBKs are not allowed in the work zone.

Workers must be trained in the operation of the safety knife. Willfully overriding the safety features of a safety knife will result in discipline, up to and including dismissal from the job site. Cut resistant gloves appropriate for the task must be worn when using a cutting tool.

Examples of acceptable auto retractable or shielded safety knives:



Remediation Management	Org Title: HSE – Remediation Management	<sup>Rev.</sup> 5.2
	Document Title: Contractor Safety Requirements	Page 14 of 27

# 20.3 SAFE DRIVING

### 20.3.1 Scope

This procedure applies to drivers operating vehicles on projects actively managed by RM and includes employees, contractors and subcontractors. This procedure does not apply to

- Employees and contractors who do not operate vehicles as part of their job duties.
- Third party deliveries and shipments when not fully dedicated to the Company.
- Service vendors for things such as vending machines, laundry/uniform service, copier repair, automobile service, compressed gas deliveries and other similar incidental service vendors.
- Service contractors such as waste haulers and materials delivery with limited site access.
- Parties contracted to do work on our locations which are not under contract, subcontract or purchase order to the Company.

# 20.3.2 Requirements

- The driver is responsible for safe operation of the vehicle at all times.
- Drivers shall have appropriate licenses, and have received Defensive Driving training within the last three years.
- Driver shall require occupants of the vehicle to wear seat belts at all times during vehicle operation.
- Driver shall avoid distractions while driving. Drivers shall not use Portable Electronic Devices or Cellular Phones, even if the device is equipped with a "hands-free" option. If it is necessary to use such a device while traveling, the driver shall carefully pull off of the road and park in a safe location prior to using. GPS devices (portable or factory installed) may be used, but data entry or screen adjustment shall only be done when the vehicle is stopped.
- Company employees must comply with the <u>Company Fleet Vehicle policies</u> when operating Company vehicles.
- For vehicle accidents involving Company vehicles or drivers, Company employees must complete an accident report and notify the Company Claims Center within 24 hours.
- All wheeled vehicles, heavy equipment and trailers must have the parking brake set, be placed in park or in gear for manual transmissions and chock blocks at minimum 1 set of 2 appropriately placed. Vehicles under 14,000 lbs. are excluded.

# 20.4 DRILLING

# 20.4.1 Scope

These requirements are specific to hollow stem auger, flight auger, air rotary, casing hammer, mud rotary, sonic, or direct push drilling operations.

# 20.4.2 General Safety and Emergency Response

- The job hazard analysis must be specific to the rig to be utilized.
- The minimum drilling rig crew size is two (2) people.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 15 of 27

- A first-aid kit must be available in an easily accessible area away from the drilling operation. Its location must be reviewed during the tailgate safety meeting.
- At least one fire extinguisher, minimum 20#, rated for type A-B-C fires must be readily accessible, removed from mounting brackets, at the site away from the drilling rig. Its location must be reviewed during the tailgate safety meeting.
- The crew must have access to cell phone or 2-way radio for communication in case of emergency.
- Work cannot be performed if lightning strikes are observed in the area.
- The use of cell phones is strictly prohibited during drilling. Cell phones must never be used within the exclusion zone.

# 20.4.3 Personal Protective Equipment (PPE) for Drilling

- Hearing protection with a minimum Noise Reduction Rating (NRR) of 17 dB must be worn in the exclusion zone or when working within 20 feet of the operating rig. Most foam insert plugs and muffs meet or exceed this requirement.
- Secure loose clothing, hair wraps, strings on jackets and hoods, and shoelaces. Jewelry is not allowed to be worn. Eliminate protruding tools from tool belts.
- A face shield must be worn for splash protection during equipment decontamination and for other activities involving splash hazards.

# 20.4.4 Equipment Safety

- A drilling contractor will complete a checklist daily to assure that equipment is in safe and operable condition. The checklist must be available on-site for review.
- There will be no oil, fuel or hydraulic fluid leaks from equipment.
- Deck engine gauges must be in working order.
- Rig controls and levers, including emergency shut-off, must be legibly labeled. Wherever possible, Pinch points should be identified and labeled.
- Adequate cribbing must be in place under the leveling jacks and outriggers to prevent tip-over or sinking into unstable soil.
- Secure the rig when it is in position, but not in use. Set brakes and/or locks, chock wheels or tracks as conditions require.
- The exclusion zone must be marked with a continuous barrier, minimum height of 28 inches, where the potential for site visitation by the public or other pedestrians exists.
- Never travel with the mast of the drill rig in the raised or partially raised position.
- The drilling rig must be equipped with an operable emergency shut-off or "kill" switch. Persons working within the exclusion zone must know the location and operation of the emergency shut-off switch. The functionality of emergency shut-off switches must be tested at the start of each work day.
- Augers, drill rods, or any down-hole equipment should be cleaned only when the drill rig is in neutral, the engine is idle, and the machinery has stopped rotating.
- Repair to rigs must be done by a person trained and qualified to perform the repair.

PHILLIPS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 16 of 27

- Small equipment leaks that develop after the start of work must be evaluated. If the leak does not impair the performance of the equipment and the leak can be contained, work may continue.
- Do not perform maintenance or refueling while the equipment is operating.
- Use of catheads or open drum-powered winches is not allowed. A cathead is a spool mounted horizontally on the rear of the drill rig and is used along with a rope to tighten or loosen a section of drill casing to the drill casing string.
- Work must cease if cables or cable clamps become damaged or frayed.
- No body part is allowed within 12 inches of a turning auger.
- Broken or substandard equipment must not be brought to the site. Equipment that becomes broken must be tagged as such and shall not be used for any purpose.
- Equipment must not be used if guards are not in place.
- Vertical storage of drill rods and augers is not allowed unless the rig is specifically designed to accommodate this practice.
- Drilling rods and augers may not be removed in multiple sections. Drilling rods and augers must be broken down at each joint as they are removed from the hole. Manual tools must not be used in combination with powered rotation.
- Rig operator and helpers must be knowledgeable of any after-market modifications to drilling equipment and be trained in its use. Use, purpose and precautions associated with after-market modifications must be specified on the procedures, job hazard analysis, or other documentation maintained at the site.
- If any down-hole equipment becomes stuck and normal rotation, pulling or pushing is not possible, a written procedure for this task ("fishing") must be followed.

# 20.5 HAND PROTECTION

# 20.5.1 Requirements

- The primary focus of hand protection should always be to eliminate hand exposure to pinch points, crush points, impact zones, and other hand hazards. It is fully acknowledged that the use of any glove will not prevent all hand injuries, but their use, in many cases, minimizes the severity of an injury.
- Tasks shall be evaluated to determine what specific hand protection is required. Not all tasks that could occur at a remediation site are addressed in the guidance table below. Gloves for specialty activities such as electrical work or welding should be specified in the JHA.
- Gloves are required to be worn at all times inside the work/exclusion zone. Gloves may be removed, if necessary, to write, interface with a keyboard, or to see to personal needs. Personnel shall wear hand protection appropriate to the hazard. Fingerless gloves are not allowed. Remediation sites have many ubiquitous cut and puncture hazards and therefore a cut and puncture resistant glove shall be the primary choice for day to day use. Consult applicable Safety Data Sheets when working with chemicals to assist with determining appropriate glove material and type.

PHILLIPS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 17 of 27

- Visually inspect gloves prior to use for signs of penetration and damage due to impact, rough treatment, or abnormal wear that might reduce the degree of safety. Replace gloves when damaged.
- Incident reports for all finger/hand/wrist incidents shall include photos safely simulating the incident with the same glove type used, and must capture the following data:
  - o glove requirements specified in pre-job planning
  - $\circ$  whether gloves were being worn at the time of the incident
  - $\circ\,$  type, manufacturer and model of glove used
  - $\,\circ\,$  area of hand or wrist affected by the incident

Corrective actions must consider improvements in hand protection including glove enhancement suggestions.

#### 20.5.2 Glove Selection

- Gloves should be selected based on the hazards of the task to be performed. Appropriate gloves (i.e., impact resistant, cut resistant, etc.) for the specific job task shall be worn until that task is completed.
- For cut resistance, glove liners may be worn, or a cut resistant glove may be worn under another glove to provide cut protection.
- The worker should be able to perform their duties without removing their gloves.
- It is unlikely that a single glove will have all the protection characteristics needed for the job. Glove features should be carefully evaluated to determine the best fit. Many gloves are tested for resistance to hazards. See Appendix A for a description of common glove testing programs. ANSI ratings for cut resistance, puncture resistance, abrasion resistance, chemical permeation resistance, chemical degradation resistance, Ignition and Flame resistance, Heat degradation, Vibration Reduction and Dexterity will assist the user in selecting a protective glove. It should be noted that the working surface of the glove is tested. A glove may have a high level of hazard resistance on the palm, but have little or no protection on the back of the hand.
- Glove design will affect the amount of protection provided. Cuff and wrist design should be considered when selecting a glove.
- Gloves selected for protection from chemical exposure should also consider other hazards associated with the tasks, and should also protect against hazards such as cut, puncture or abrasion. A chemical resistant glove may be work over another glove to provide protection from multiples hazards.

(PHILIPS) Permediation Management	Org Title:	HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title:	Contractor Safety Requirements	Page 18 of 27

# 20.5.3 Glove Selection Guideline

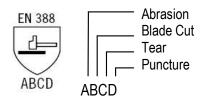
Hazard	Tasks	Recommended Standard *	Representative gloves*
Impact Hazards, Med/Heavy Duty, Cut/Puncture	Drilling/direct push activities, staging to breakdown. Heavy materials handling Power tools Air knifing Hydro excavation	Plastic Resin Backhand Protection, ANSI Cut Level 3 or 4 EN 388 Cut Level 3 or 4	Hexarmor™ Chrome Hexarmor™ GGT5 Hexarmor™ L5 Hexarmor™ Steel Leather Ringers Roughneck SuperCuff™
Med/Heavy Duty, Cut/Puncture, Oil/Solvent Resistant	Tasks where materials are treated with oil or solvents.	ANSI Cut and Abrasion Level 3, EN 388 Cut Level 3	Memphis™ Ultra Tech Nitrile Cut & Splash Best™ Neoprene 6780 Hexarmor™ Ten X Threesixty
Medium Duty, Cut/Puncture, Gloves with Oily Surface Grip	Light materials handling, wet service	ANSI Cut and Abrasion Level 3, EN 388 Cut Level 3 , Abrasion level 2 or 3	Best™ Zorb-It Ultimate HV 4567 Ansell™ Cut Protective Glove 97-505
Med/Heavy Duty, Cut/Puncture, Abrasion	Light Materials Handling System O&M Use of hand tools Hand Auguring Heavy Equipment Operator	ANSI Cut and Abrasion Resistance Level 2, EN 388 Cut and Abrasion Level 2 or 3	Perfect Fit™ PF570 Hexarmor™ Level Six 9010/9012 Ironclad™ Cut Resistant Glove
Light Duty, Cut/Puncture, Abrasion	Handling soil samples or groundwater samples Opening spoons Well construction	ANSI Cut Level 2, EN 388 Cut Level 2, Puncture Resistance, Abrasion Resistance	Memphis <sup>™</sup> Ninja Max N9676GL Memphis <sup>™</sup> UltraTech Dyneema 9676 Memphis <sup>™</sup> Ninja Ice (Cold Weather) Ansell <sup>™</sup> Hyflex 11-511. 11- 624 Ansell <sup>™</sup> Powerflex 80-813 Ironclad <sup>™</sup> Workforce
Light Duty	Observation	Cut Resistance, any level	
			good choices and generally
meet the standards, but a			used for abomical protection an
to prevent contamination s			used for chemical protection or tandem with cut/puncture
protection. Gloves available in high vi	isibility colors have shown	to be effective and are n	referred.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 19 of 27

# Appendix A: Glove Standards

Globally, there are two different performance standards for hand protection, the European Standard EN388 and the ANSI/ISEA 105 Standard for the US. The test methods are not entirely identical and, therefore, cannot be directly correlated. In both standards, a higher rating is a more hazard resistant glove.

Glove ratings by the EN388 Standard are displayed as a four digit number indicating the performance of the fabric in testing for Abrasion, Blade Cut, Tear and Puncture, in that order.



Glove ratings are not always printed on the glove or on a tag on the glove. Standards are usually printed on the box or can be accessed in catalogs, including internet catalogs, and product specification information.

# **Cut Resistance**

The EN388 Standard uses the Coup test method for cut resistance. A circular blade is moving back and forth across the fabric sample under a fixed load of 500 grams while rotating in the opposite direction of the linear movement. The method simulates the number of repetitive cuts needed to cut through the fabric on the same position of the glove using a constant load. The result of the test referred to as the cut index tells you how much better the sample is compared to a reference cotton fabric. The cut resistance is shown as the **second** digit in an EN388 rating. The ANSI standard for measuring cut resistance of materials used in protective clothing is based on ASTM F1790. It measures the amount of force applied for failure to occur at one inch of travel for a standard cutting blade. A higher value indicates a higher level of cut resistance.

ANSI Cut Resistance Standard		
Level	Weight (g) needed to cut	
	through material with 25 mm of	
	blade travel	
0	< 200	
1	≥ 200	
2	≥ 500	
3	≥ 1000	
4	≥ 1500	
5	≥ 3500	

PHILIDS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 20 of 27

# **Puncture Resistance**

The ANSI standard and the EN standard use the same test method for puncture resistance. A higher value indicates a high puncture resistance.

ANSI and EN Puncture Resistance Standard		
Level	Puncture (Newtons)	
0	< 10	
1	≥ 10	
2	≥ 20	
3	≥ 60	
4	≥ 100	
5	≥ 150	

# **Abrasion Resistance**

The ANSI standard is based on ASTM D3389-05. The fabric is measured for its ability to resist abrasion from H-18 abrasion wheels with 2 different loads.

ANSI Abrasion Resistance Stand	ard
--------------------------------	-----

Level (tested at	Abrasion Cycles to
500 g load)	Fail (Newtons)
0	< 100
1	≥ 100
2	≥ 500
3	≥ 1000
Level (tested at	
1000 g load)	
4	≥ 3000
5	≥ 10000
6	≥ 20000

#### Impact Resistance

There currently are no ANSI or EN standards for impact resistance and backhand protection of gloves. Gloves with thermoplastic resin components on the back hand and fingers provide impact and backhand protection and are marketed as such.

PHILLIPS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 21 of 27

# 20.6 JOB HAZARDS ANALYSIS

#### 20.6.1 Purpose

The purpose of the Job Hazard Analysis (JHA) procedure is to define the tools used to identify and reduce or eliminate hazards that may be present during specific tasks. JHA is also known throughout the industry by other names, including Job Safety Analysis (JSA).

#### 20.6.2 Overview

A JHA is a documented review of the hazards associated with execution of a specific task and the required actions taken to reduce the hazards. Injuries occur if workers do not recognize hazards and follow procedures. Establishing proper procedures is one of the benefits of conducting a job hazard analysis – that is, carefully studying and recording each step, identifying existing or potential hazards and determining the best method to reduce or eliminate these hazards.

The benefits of the JHA are:

- To ensure complete communication of scope of work
- To ensure common understanding of the required tasks and associated hazards and safeguards
- Evaluating tasks for possible improvement in methods
- Instructing new workers
- As a means to guide and document the pre-job discussion. It is the Company's expectation that the GO Card be used for that discussion.

The results of a JHA are a list of steps with their associated hazards and preferred mitigation measures. Normally, the JHA is constructed in a tabular form with at least three columns – Job Steps, Potential Hazards and Mitigating Measures. An example of a JHA form is included as Attachment 1. Any form that identifies Job Steps, Potential Hazards and Mitigating Measures is sufficient.

If a new task is identified during the day, stop work. After the new task has been evaluated with a JHA, work may resume.

#### 20.6.3 Roles and Responsibilities

Contractors are responsible for:

- Determining appropriate scope for a JHA
- Developing the JHA
- Leading GO Card discussions prior to beginning work activity.

Site workers are responsible for:

- Participating in the JHA and GO Card discussion.
- Compliance with steps to eliminate or reduce identified hazards.

- Identifying changes in personnel, hazards, site conditions and/or equipment and tools needed to complete the task.
- STOP work if conditions change, and a modification of the JHA is needed.
- Indicating their knowledge of the JHA by signature.

Program managers

• Review compliance with JHA during site audits.

# 20.6.4 Requirements

# 20.6.4.1 When to Use

A JHA can be performed for any task in the workplace, whether the set of tasks is "special" or "routine". The GO Card shall be used to guide the pre-job discussion of the JHA.

After a work scope is completed, the JHA for the next task should be discussed. Multiple JHAs for several tasks should not be discussed at the start of the day. Rather, discuss the JHA for the first task of the day. When that scope of work is complete, the JHA for the next task should be discussed, and scope of work completed. A work day commonly includes several JHA discussions throughout the day as work progresses.

# 20.6.4.2 Scoping a Job for Analysis

Narrowly defined activities like "opening a valve" or "locking a gate" are termed in single actions and should not be considered for JHA. A job defined in terms of what is accomplished, like "installing a monitoring well" is too broad. A good rule-of-thumb is 6 - 8 steps per JHA. "Site mobilization" and "collecting groundwater samples" are examples of tasks suitable for a JHA.

# 20.6.4.3 Conducting the JHA

There are three simple steps to a JHA.

- Define the job by listing successive steps or activities.
- Carefully evaluate each job step to identify hazards. Only hazards that are identified can be corrected or eliminated.
- Develop safe procedures to eliminate the hazards and prevent the potential for accidents.
- 1. Defining Job Steps

Before searching for hazards a job should be broken down into sequential steps. This should be done with an experienced worker with a history of performing the work in a safe manner. Each step should describe what is being done. Avoid these two common errors.

- Making the breakdown so detailed that an unnecessarily large number of steps result.
- Making the breakdown so broad or general that the basic steps are not recorded. Write down the basic steps in sequence.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 23 of 27

Completely describe each step. Any deviation from regular procedure should be recorded as well; it is this deviation that may lead to an incident.

The wording for each step should start with an action word like "remove", "open", or "turn". The step is completed by naming the item to which the action applies, for example, "Apply label to sample" or "Remove core from auger".

Obtain agreement from the work crew that the steps are correctly written.

### 2. Identifying Hazards

Identify hazards,--both on-site conditions and those connected with the job procedure. It is not necessary to address overall site hazards identified by the Site Health and Safety Plan or the general site-wide procedures. For example, if the site speed limit is 10 mph, the hazards and mitigating measures associated with driving at excessive speeds need not be assessed in the JHA. Focus on the job steps of the task at hand. To do this, ask questions about each step: (Note this is a list of sample questions, not an exhaustive list.)

- Is there a danger of striking against, being struck by, or otherwise making harmful contact with an object?
- Can the worker be caught in, by, or between objects?
- Is there a potential for a slip or trip? Can the worker fall on the same level or to another level?
- Can strain be caused by pushing, pulling, lifting, bending, or twisting?
- Is the environment hazardous to safety or health? For example, are there potential concentrations of toxic gas, vapor, mist, dust, heat, or radiation? Are there hazards associated with the weather today that can affect our work?
- Are there fixed objects that may cause injury, such as sharp objects or edges?
- Can moving or rotating machinery or materials injure the worker?
- Will the worker be positioned to the equipment in a way that is potentially dangerous?
- Is the worker wearing clothing or PPE that could potentially cause an injury?
- Do suspended loads or potential energy pose hazards?
- Are there other task specific hazards?

Injuries to the hands and fingers represent the majority of the injuries sustained in RM. For this reason, potential hand and finger hazards should be carefully considered when performing a JHA.

### 3. Developing Mitigating Measures

The final step in a JHA is to develop actions to mitigate the hazards. The principal solutions are:

- Change the physical conditions that create the hazards.
- Describe work practices that eliminate or limit the hazard.
- Specify personal protective equipment (PPE).
- Change or redesign the procedure.
- Reduce the frequency, if feasible.

Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 24 of 27

Eliminating the hazard by changing the conditions that create the hazard is the desired safeguard.

Where the hazard cannot be eliminated, mitigating measures must be specific. General precautions such as "be alert," "use caution," or "be careful" have limited value to mitigate a hazard. For example, the recommendation "Make certain the wrench does not slip or cause loss of balance" is incomplete. It does not tell how to prevent the wrench from slipping. A better way to describe the safeguard is: "Set wrench properly and securely. Test its grip by exerting light pressure on it. Brace yourself against something immovable, or take a solid stance with feet wide apart, before exerting full pressure to prevent loss of balance if wrench slips."

Where PPE is required to mitigate the hazard, list specific equipment. The use of PPE will not prevent an accident, but in many cases minimizes the severity of an injury.

A procedure that has been redesigned should be thoroughly examined for new hazards.

### 20.6.4.4 Review of JHA Prior to Start of Work

- The GO Card is a tool devised to facilitate discussion of a JHA and is not a checklist or attachment to the JHA.
- The GO Card shall be used by the work crew to refresh on job hazards and possibly identify other hazards and mitigating measures. The leader of the GO Card review shall involve all members of the work crew in this important pre-job discussion.
- JHA review should ask the questions, "What is it about THIS job on THIS day at THIS location that can cause a hazard?"
- GO Cards can be obtained from the Program Manager.

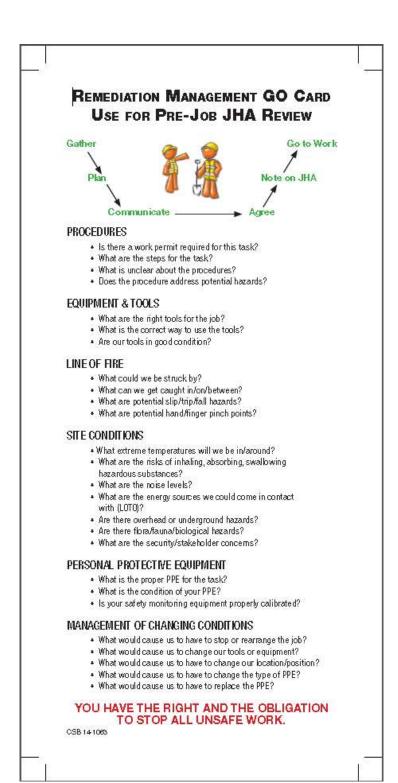
### 20.6.4.5 Revising the JHA

- When field conditions change, the JHA shall be marked to include job steps, hazards and mitigating measures of the revised conditions.
- If an incident or significant near miss occurs, STOP work, review the JHA and determine what changes are needed.
- Any time a JHA is revised, training in the new job methods or protective measures should be provided to workers affected by the changes.

COLINICS	Org Title: HSE – Remediation Management	Rev. 5.2
Remediation Management	Document Title: Contractor Safety Requirements	Page 25 of 27

# Attachment 1: Example Job Hazard Analysis Form

		ard Analysis		
Job Description: Date:		Worker roster/signatures: Analysis By:		
1				
2				
3				
4				
5				
6				
7				
8				

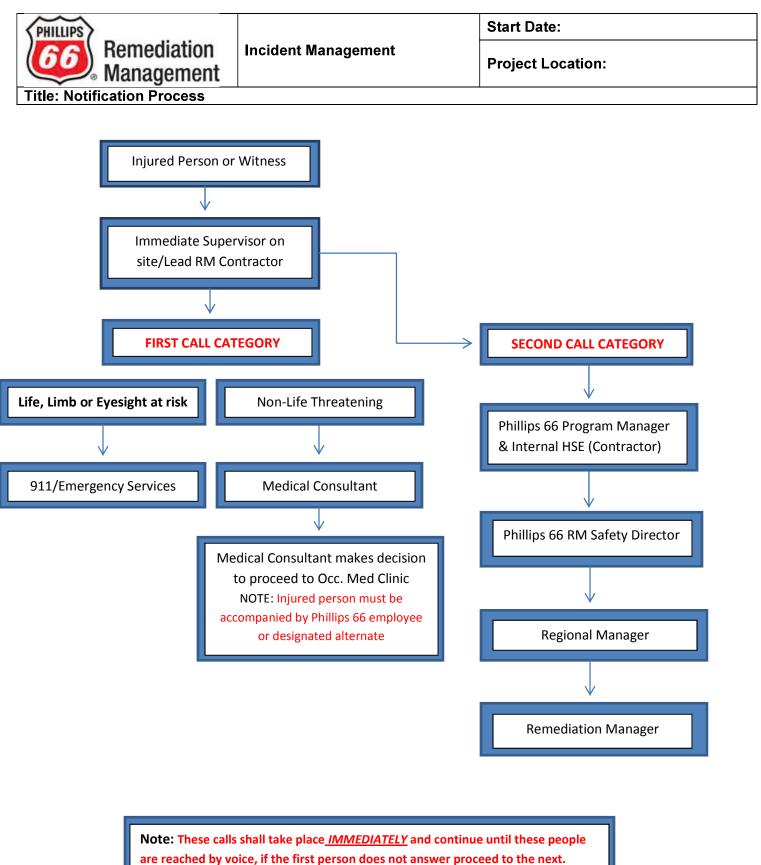


Remediation Management	Org Title: HSE – Remediation Management	Rev. 5.2
	Document Title: Contractor Safety Requirements	Page 27 of 27

## 20.7 AIR EXCAVATION

There are a variety of methods to clear boreholes or locate underground utilities and obstructions. Where air excavation is used the following minimum requirements will be met.

- 1) In addition to hand protection, the minimum protective equipment required in the exclusion zone during air knife operation are goggles, face shield, and hearing protection.
- 2) At some sites, ambient air monitoring and respiratory protection may be needed to minimize health exposures due to airborne dust or contaminants.
- 3) Review operating and safety instructions of the air excavation tool before use. Do not exceed the safe operating pressure.
- 4) Check equipment prior to use. Inspect hoses, piping, valves, gauges and wand for leaks, abrasion, corrosion or other signs of damage. Verify all connections are tight and secure. Repair or replace damaged parts. Verify that the emergency shut off devices are functional.
- 5) Use whip checks at all pressurized hose connections. Do not disable any safety device on the apparatus.
- 6) Do not point the wand at any person during operation.
- 7) Do not use the air lance as a pry/digging tool.
- 8) Evaluate the risk of static electricity from vacuum operations and employ grounding to mitigate where fire risk is present.
- 9) If vacuum capture is not effective, a shield may be needed for the first few inches of excavation to capture particles, fragments, and dust from ejecting. Protect any surface near the work area that could be damaged by ejected material.
- 10) To prevent falls, keep the work area clear of tripping hazards. Cover or barricade open excavations as appropriate and at the end of the work day.



Email is <u>NOT</u> an approved means of notification.

# Appendix G Working Alone Safety Requirements and Documentation



# Working Alone Safety Plan

**Scope:** A worker is considered "alone" at work in the following circumstances: assistance is not readily available to the worker in the event of injury, ill health or emergency; or if a reasonable expectation that a call for assistance will not or cannot be responded to and the worker's absence may not be noticed for some time.

Employee:	
Office Telephone Number:	Cell Phone Number:
Vehicle Make/Color:	Vehicle License Plate:
Commencement Point:	Destination Point:
Estimated Miles/Kilometres:	Estimated Drive Time:

 Designated Contact:
 Office Telephone Number:

 Cell Phone Number:
 Cell Phone Number:

Emergency Contact Numbers:			
Name	Office Number	Cell Number	
Fire/Ambulance/Police/Highway Patrol	911	911	
GHD Incident Reporting Hotline	866 529-4886	866 529-4886	
GHD RSHM			
GHD Supervisor			
GHD PM			
Client Contact:			

Agreed Methods of Communication (detail below)		

### **Itinerary Details**

Risks and Hazards, including inherent risks of the task and locations to be avoided or where extra precautions	
are to be taken (e.g. roadwork or known locations with high accident rates)	

Communication Plan Timeframes:			
Arrival on Site	Yes 🗆 No 🗆 N/A 🗆		
Completion of allocated activities on site	Yes 🗆 No 🗆 N/A 🗆		
Due to leave site	Yes 🗆 No 🗆 N/A 🗆		
Realization that expected completion timeframe must be extended	Yes 🗆 No 🗆 N/A 🗆		
Experience of any difficulties/emergency situation	Yes 🗆 No 🗆 N/A 🗆		
Due to call in	Yes 🗆 No 🗆 N/A 🗆		

Additional Risk Reduction Measures			

#### Please submit completed Working Alone Safety Plans in the following manner:

Field – To project field file Office – To Laserfiche project file 400012 -150 or 200012-150, under the HSE holding area

# Appendix H LOTO Hazardous Energy





# **GHD NA - Standard Operating Procedure - HSE**

Control of Hazardous Energy - Lockout/Tagout - 144



# **Table of Contents**

1.	Purpo	ose	. 1
2.	Scop	e	. 1
3.	Regu	latory Background	. 1
	3.1	Definitions	. 2
4.	Progr	am Administration	. 3
5.	Dutie	s and Responsibilities	. 4
	5.1	Supervisors and Project Managers	. 4
	5.2	Employees	. 4
6.	Progr	am Elements	. 4
	6.1	Energy Hazard Assessment	. 4
	6.2	Lockout Devices	. 4
	6.3	Tags	. 5
7.	Empl	oyee Training	. 8
8.	Contr	actors	. 9
9.	Progr	am Inspections	. 9
	9.1	Periodic Inspections	9

# **Attachments**

Attachment A	Written Energy Control Procedure Template (NA-FM-HSE-147)
Attachment B	Lockout/Tagout Periodic Inspection Form (NA-FM-HSE-148)



# 1. Purpose

The purpose of this Energy Control Program is to prevent personal injury to GHD employees and/or damage to company property during the service/maintenance, repair and/or installation activities involving hazardous energy sources. The program is also designed to prevent accidental, inadvertent or careless starting of machinery, opening of valves or pipelines, energizing of electrical equipment, and other related energy hazards associated with the operation, maintenance or repair activities.

# 2. Scope

This document establishes an Energy Control Program for GHD.

Only authorized personnel shall be permitted to lockout/tagout equipment and infrastructure (e.g., piping, valves, and wiring). Authorization shall be based on experience, training and the ability to perform repair or maintenance operations, or to recognize the need for repair or maintenance.

Only two people shall be authorized to remove lockout/tagout devices: 1) the person who installed the device; or 2) the supervisor of the person who installed the devices (i.e., as long as all affected employees are notified of this removal and the actions leading up to the removal are documented in full, describing who removed, why it was removed and how employees were notified).

Employees shall receive training regarding the implementation of this Energy Control Program as required by the standard and the use of established lockout/tagout procedures in their work areas.

# 3. **Regulatory Background**

The Occupational Safety and Health Administration's (OSHA) "Control of Hazardous Energy Sources" standard, 29 CFR 1910.147, covers the servicing and maintenance of machines and equipment in which the unexpected energization or startup of the machines or equipment could cause injury to employees.

The standard also establishes minimum performance requirements to control hazardous energy and requires that employers develop and implement an energy control program.

The elements of an energy control program are as follows:

- Lockout/tagout program
- Employee protection
- Energy control procedures
- Protective materials and hardware
- Periodic inspections
- Training and communication



- Energy isolation
- Employee notification

## 3.1 **Definitions**

The following definitions are applicable to the Lockout/Tagout program:

**Affected Employee** – An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout or whose job requires him/her to work in an area where such servicing or maintenance is being performed.

**Authorized Employee** – A person who locks out or tags out machines or equipment in order to perform servicing or maintenance. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under the standard.

**Blanking or Blinding** – The absolute closure of pipe(s), lines(s) or duct(s) by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

**Double Block and Bleed** – The closure of a line, duct, or pipe by closing and locking or tagging two in-line valves and by opening and locking or tagging a drain or vent valve in the line between the two closed valves.

**Capable of Being Locked Out** —An energy isolating device capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out if lockout can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy control capability.

Energized — Connected to an energy source or containing residual or stored energy.

**Energy Isolating Device** — A mechanical device that physically prevents the transmission or release of energy including, but not limited to, the following:

- A manually operated electrical circuit breaker.
- A disconnect switch.
- A manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors and, in addition, no pole can be operated independently; a line valve, a block, and any similar device used to block or isolate energy.

Note: Push buttons, selector switches, and other control circuit-type devices are not energy isolating devices.

**Energy Source** — Any source of electrical current, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

**Group Locks** — Locks applied to energy isolating devices by multiple crafts, crew, and/or contractors in a specific location or over a large geographical area.



**Hot Tap** — A procedure used in repair, maintenance, and servicing activities that involves welding on a piece of equipment (pipelines, vessels, or tanks) under pressure, to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

**Line Breaking** — Line breaking means the intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury. Reliance on valves alone as a means of isolation can result in a catastrophe, since valves can unexpected leak vapors, gases, or fluids.

**Lockout** — The placement of a lockout device or an energy-isolating-device, in accordance with an established procedure, ensuring that the energy-isolating-device and the equipment being controlled cannot be operated until the lockout device is removed.

**Lockout Device** — A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy-isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

**Service and/or Maintenance** — Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning, or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the *unexpected* energization or startup of the equipment or release of hazardous energy.

**Tagout** — The control of hazardous energy by the placement of a tagout device on an energy isolating device. The equipment being controlled must not be operated until the tagout device is removed.

**Tagout Device** — A device used to positively secure a valve, switch, circuit breaker, or other control device in a safe position and to prevent energization of the equipment. The energy isolating device and the equipment being controlled must not be operated until the tagout device is removed.

# 4. **Program Administration**

The GHD HSE Managers will have the overall responsibility for administrating this program within their geographical area, which will include the following responsibilities:

- Ensure that personnel are trained to implement lockout/tagout procedures.
- Only authorized employees implement lockout/tagout procedures.
- Ensure that energy control procedures have been established.
- Ensure that the proper lockout/tagout devices are available to authorized employees.
- Conduct annual evaluations of this program and periodic inspections of lockout/tagout procedures are completed.
- Ensure contractors are informed of GHD's lockout/tagout procedures.



# 5. **Duties and Responsibilities**

## 5.1 Supervisors and Project Managers

Supervisors and managers will have the responsibility for the following, with respect to this program:

- Ensure that authorized and affected employees are informed about the GHD energy control
  program, receive the proper training in the implementation of this program, and that proper
  energy control procedures are followed during project activities.
- Ensure that the proper protective materials and hardware (locks, tags, chains, etc.) are available for use on each project Site or facility.
- Conduct periodic inspections and annual reviews with authorized and affected employees on each of the lockout/tagout procedures that they will be involved in.

## 5.2 Employees

GHD employees will be responsible for adhering to the safe work practices as outlined in this program. Employees will also obey warning signs for the energy control program.

# 6. **Program Elements**

## 6.1 Energy Hazard Assessment

An energy hazard assessment shall be conducted by qualified technical personnel for each machine and/or equipment where exposure to hazardous energy can be anticipated to occur during repair and/or maintenance activities. The hazard assessment will be documented as part of the GHD written energy control procedure for each machine or equipment. These procedures will be written for each machine or piece of equipment where exposure to hazardous energy can occur during repair and/or maintenance activities. Site specific Energy Control procedures will be written using the approved template located in Attachment A of this document.

### 6.2 Lockout Devices

Protective materials and hardware (i.e., locks, tags, multilock devices, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware) shall be available for isolating, securing or blocking machines or equipment from their energy sources.

Lockout devices shall adhere to the following guidelines:

- Lockout devices shall be easily identified and not used for other purposes. They shall be capable of withstanding exposure to the environment for the maximum time that exposure is expected.
- Lockout devices shall be standardized within the facility by either color, shape, or size.
- Lockout devices shall be substantial enough to prevent removal unless excessive force or tools (such as bolt cutters or other metal cutting tools) are used.



## 6.3 Tags

Tags shall be available for labelling equipment or machinery that has been locked out.

Tags shall adhere to the following guidelines:

- The construction of tags shall be such that environmental exposure will not cause the tag to deteriorate or the message on the tag to become illegible.
- Tags and their means of attachment shall be substantial enough to prevent accidental removal. The tag attachment shall be non-reusable, attachable by hand, and self-locking.
- Tags shall be easily identified and not used for other purposes.
- Tags shall be standardized by either color, shape, or size.
- At a minimum, tags shall include the following information:
  - The identity of the employee applying the lockout device, the employee's supervisor, and any service or maintenance personnel.
  - - The machine or equipment on which the lockout/tagout procedure is being used.
  - - The date that the lockout/tagout devices are installed.

Tags will warn of hazardous conditions if the machine or equipment is energized. They shall use wording similar to: DO NOT START, DO NOT OPEN, DO NOT CLOSE, DO NOT ENERGIZE, DO NOT OPERATE, ETC.

#### **Preparation for Shutdown**

The authorized employee is responsible for informing affected employees of each occasion when equipment will be locked and tagged out.

The authorized employee is responsible for knowing:

- 1. The type and magnitude of energy present.
- 2. The hazards of the energy to be controlled.
- 3. The method and/or means for energy isolation and control.

The supervisor is responsible for informing authorized employees whenever changes are made to the lockout/tagout procedure.

#### Machine or Equipment Shutdown

The authorized employee is responsible for turning off or shutting down equipment using the specific established procedures for each machine and/or equipment.

The supervisor is responsible for ensuring that only authorized employees perform machine and/or equipment shutdown.



#### Machine or Equipment Isolation

All energy isolating devices (disconnects, valves, etc.) are operated in a manner to isolate the equipment from the energy source(s):

- Be sure to follow the written energy isolation procedure.
- Be sure to isolate all secondary energy sources.
- Never pull electrical switches while under load.
- Never remove a fuse instead of disconnecting.

#### General Procedures for the Application of Lockout/Tagout Devices

The following are general procedures to be adhered to while applying lockout/tagout devices:

- "Authorized" employees affix lockout/tagout devices to each energy-isolating device.
- Locks or other danger tags issued for lockout and/or tagout are not used for any other purpose.
- Each person conducting maintenance and/or repair on the equipment is responsible for attaching his/her personal locks, without exception.
- Lockout devices are affixed in a manner in which they are visible to any person inspecting the equipment for such a device, and also in which they cannot be easily removed.
- Each lockout/tagout device identifies the name of the employee applying the device and his department.
- Tags are only allowed when there are no means for affixing a lock, and it must be able to withstand corrosive environments, must be attached to a non-reusable device, attachable by hand, self-locking, and have a minimum breaking strength of 50 pounds (a nylon cable tie).
- Tags are affixed in a manner that clearly indicates that the operation or movement of the energy isolation device from the "safe" or "off" position is prohibited.
- Whenever a tagout device cannot be affixed directly to the energy isolation device, it shall be located as close as safely possible to the device and in a position obvious to anyone attempting to operate the equipment. Also, additional measures are taken to ensure that equipment cannot be energized, such as: the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or removal of a valve handle.
- No tag but the approved DANGER DO NOT OPERATE tag is used for the purpose of tagout. (NOTICE: tags should be used only for information of a general nature.) Include employee name, department, and date on the tagout device.
- Verify that the main disconnect switch or circuit breaker can NOT be moved to the "ON" position once the lockout is in place.

#### Stored Energy

After applying locks and tags to the energy isolation devices, all potentially hazardous stored or residual energy must be relieved, disconnected, bled, restrained, or rendered safe.



When locking out process or feed lines, a double block and bleed is used. If this method is not possible, an alternate choice is used. (Example: blanking or blinding of all affected lines, opening of the lines by removal of a spool or disconnecting the lines from the source and capping the ends.) When bleeding the lines, leave vent lines open.

Mechanical parts in hydraulic and pneumatic systems that could move from a loss of pressure shall be blocked or supported.

### Verification of Isolation

Prior to starting work on machines or equipment that have been locked or tagged out the "authorized" employee must verify that isolation and de-energization of the machine or equipment has been achieved.

Turn "ON" (TRY) all start buttons and other activating controls on the equipment itself.

When satisfied that equipment cannot be energized without reactivating energy control devices, place all buttons and other activating controls back in the "Neutral" or "Off" position.

### Release from Lockout/Tagout Control

Prior to restoring energy to machine or equipment, the following actions must be taken by an authorized employee:

- Inspect the area for removal of tools and/or nonessential items.
- Ensure the equipment is intact and all guards have been reinstalled.
- Ensure the employees working on the machine or equipment have been safely positioned or removed from the area.
- Ensure that the employee who applied the device(s) removes the lockout and/or tagout devices from each energy-isolating device.

Once maintenance and service has been completed, notify affected employees that the lockout/tagout devices are removed and the machine or equipment is released for operation.

**Note**: In situations in which the service or maintenance of a machine or equipment needs to be energized for testing, the above actions shall be taken prior to the removal of locking devices and energization. Following the testing, the machine or equipment will be de-energized and energy control measures reapplied.

### Removal of Lockout/Tagout Device

No one shall attempt to operate any equipment, remove any lockout/tagout (L/T) device, ignore, bypass, or otherwise defeat any device on equipment in which another employee has placed a lockout/tagout device. Examples are as follows:

• Employee A, locks/tags grinder "X" to work on the equipment. Employee B needs to work on grinder "X". Employee B MUST get in touch with Employee A, have he/she remove his/her lock/tag device and both would then lock/tag the grinder. Employee A must re-institute all lockout/tagout procedures after Employee B completes work.



 If valve "Y" were locked/tagged out by Employee A and Employee B needed to work on valve "Y", then Employee B must get in touch with Employee A and have he/she remove their lockout/tagout device. Then both would lock/tag out the line at another location, which would protect both Employee A and B.

If equipment controlled by a lockout/tagout device must be energized, or tampered with in any way, the employee(s) who own the L/T device are contacted and he/she removes his/her own device.

### Lockout/Tagout Involving More Than One Employee

When more than one employee works on the same equipment, each employee must attach his/her personal lock and tag to the lockout device(s) for that equipment.

If it is not possible or practical for every individual working on a job to place his/her lockout/tagout on every piece of equipment covered by lockout/tagout, one designated, authorized person of a work crew, or a supervisor with the knowledge of the crew, may lockout/tagout equipment for the whole crew. In those cases, if the device is lockable, the designated, authorized individual will place his/her key (or keys if multiple devices are involved) in a group lock box and members of the crew must attach their locks to the lock box. It is the responsibility of the designated, authorized individual to carry out all the steps of the lockout/tagout procedure and inform the crew when it is safe to work on the equipment. Additionally, the lock placed by the designated, authorized person must not be removed until the locks of all others have been removed and that one person is completely satisfied that it is safe to do. Once this lock is removed, the designated, authorized person may retrieve his/her keys from the lock box.

Each employee is held responsible for the prompt removal of his/her lock and tag when his/her work has been completed.

When a job is to be extended from one shift to another, the relieving employee or the supervisor shall attach his lock/tag to the lockout device before the employee going off shift removes his lock/tag. If the supervisor places his lock/tag on the device instead of the oncoming employee, the oncoming employee places his/her lock/tag on the device before starting.

### Exceptions

Cord and plug connected equipment, such as power tools office machines, etc., do not require a lockout/tagout, as long as the plug end is unplugged and kept in the exclusive control of the person working with such equipment.

# 7. Employee Training

Employees authorized to attach and remove lockout/tagout devices shall be provided with initial training regarding the safe application, usage, and removal of such devices. Each authorized employee will receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the associated energy, and the methods necessary for energy isolation and control.



All authorized employees will be provided with refresher training whenever the following conditions apply:

- There is a job assignment change.
- There is a change in machinery or equipment, or process changes that present new hazards.
- There is a change in the energy control procedures.
- The supervisor has reason to believe that there are deficiencies in the employee's understanding of the following:
  - The hazards associated with the energy that controls the machinery or equipment in the employee's work area.
  - - Application and removal procedures for lockout/tagout devices.

Employees who work in areas where lockout/tagout procedures are used (affected employees), shall receive initial and refresher training in the purposes and uses of lockout/tagout devices and principles behind their use.

The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.

# 8. Contractors

The Project Manager or site supervisor is responsible for informing the outside contractors of GHD's Lockout/Tagout Procedure. The contractor is responsible for complying with this procedure or by supplying the Project Manager with a copy of their company's procedure for approval.

To ensure the hazardous energy control devices used by the contractor differ from those used by GHD the contractors shall be required to identify their lockout/tagout devices. The device shall include a DANGER Tag containing the name of the company, the individual applying the device and a 24-hour phone number where the company representative can be reached.

# 9. **Program Inspections**

## 9.1 **Periodic Inspections**

Periodic inspections of the energy control procedure are required to be conducted at least annually by the supervisor to ensure that the procedure is adequate and that both, the procedure and the requirements of the OSHA standard (29 CFR 1910.147) are being followed. The inspection shall identify any inadequacies and deviations from the procedure. The inspections shall be documented to include the identification of the machine or equipment inspected, date, employees included in the inspection, and the person performing the inspection. The inspection will be documented using the form in Attachment B of this document. This program will be reviewed and updated, as necessary, at a frequency necessary to maintain its effectiveness. The responsibility for maintenance of this program belongs to the Corporate HSE Manager.



#### **Lockout Inspections**

Inspections of lockout procedures shall include a review with the inspector and each authorized employee. The review will cover the employer's energy control (lockout) procedures and the employee's responsibilities.

#### **Tagout Inspections**

Inspections of tagout procedures shall include a review with the inspector and each authorized and affected employee. The review will cover the employer's energy control (tagout) procedures and the employee's responsibilities.

The Project Manager is responsible for ensuring that periodic inspections of the Lockout/Tagout (Energy Control) Program are conducted to assess its effectiveness and to correct any deviations observed.



# **Attachments**

GHD | NA-SOP-HSE-144 Control of Hazardous Energy – Lockout/Tagout | Rev. 0 – July 2015



# Written Energy Control Procedure Template

Project Name:					Project Number:	Project Number:		
Name of Facility:					Maintenance or	Maintenance or Repair Activity:		
Equipment Name:					Equipment Seria	Equipment Serial Number:		
Energy Sources Present								
Electric	cal	Chemical		Mechanical	Pneumatic	□ Hydraulic	Thermal	
Other:	□ Other:							
SHUT DOWN								
	Energy Source		Isola	iting Device	Location	Action	Verification Step	
1								
2								

Note: Photos may be attached to facilitate LOTO procedure detailed above.

START UP					
	Energy Source	Isolating Device	Location	Action	Verification Step
2					
1					

Note: Photos may be attached to facilitate LOTO procedure detailed above.

Lockout/Tagout Procedure Written By:					
Name:	SS#	Date:	Signature:		
Procedure Verification					
The procedure listed above was fie, 2	·	of	on the day of		
If the energy sources affecting this equipment are modified in anyway, the overall procedure should be re-evaluated.					



# Lockout/Tagout Periodic Inspection Form

Project Name:			Project Number:		
Name of Facility:			Maintenance or Repair Activity:		
Equipment Name:			Equipment Serial	Number:	
		Energy Sour	ces Present		
Electrical	Chemical	Mechanical	Pneumatic	Hydraulic	Thermal
Other:	·				-
Are changes to the	e procedure required	d? □ Yes	□ No		
If Yes, identify:					
Employees include	ed in the inspection:				
			1		
Supervisor (Print N	Name)		Signature		
Date of Inspection:					

# Appendix I Hot Work





# GHD NA - Standard Operating Procedure - HSE

Hot Work Standard - 014

# **Table of Contents**

1.	Purpose	. 1
2.	Scope	. 1
3.	Regulatory Background	. 2
4.	Terms and Definitions	. 2
5.	Roles and Responsibilities	. 3
6.	Personal Protective Equipment (PPE)	. 5
7.	Hot Work Procedures	. 5
8.	Safe Work Practices Specific to Welding	11
9.	Training	13
10.	Recordkeeping	14

# **Attachments**

Attachment A Hot Work Permit and Welding Checklist

# 1. Purpose

The purpose of this procedure is to define safe practices for activities involving hot work such as brazing, cutting, welding, as well as non-welding activities involving hot work and the prevention of fires that may result from hot work activity. Hot work is considered to be any process or work that has a significant potential to start fires or cause an explosion due to the production of flames, heat, and/or sparks in the presence of flammable materials. Hot work includes, but is not limited to:

- 1. Any equipment that generates an exposed flame or filament.
- 2. Burning acetylene or other gas.
- 3. Welding, brazing, cutting, grinding, or soldering.
- 4. Using electric resistance heaters.
- 5. Using abrasion blasting or using high-pressure hydro-jet.
- Using battery, electric or air-driven power tools or equipment capable of causing "hot" sparks of enough energy to ignite a flammable mixture (e.g., jack hammers, rattle guns, air compressors, generator sets and drilling).
- 7. Operating motorized vehicles (battery or internal combustion) within areas with the potential for flammable vapors.
- 8. The use of electrical or battery operated equipment or devices that are not intrinsically safe or explosion proof in a Hazardous (Classified) location (i.e., radios, flashlights, phones, cameras, battery operated pumps, computers, etc.).

Because of the serious potential for fire and explosion presented by activities involving hot work in and around oil and gas production and storage equipment, specific safe work practices and procedures must be employed. Whenever possible, reduce the risk by applying the hierarchy of controls. First, eliminate hot work activity whenever possible or eliminate ignition sources by selecting alternative work methods or equipment. Second, whenever and wherever possible, hot work should be done only in a designated "safe" hot work area. Whenever circumstances arise that require the performance of hot work on or in close proximity to oil and gas equipment, explosive atmospheres, or near flammable vapors and/or materials, the hot work shall be undertaken with careful planning and preparation, and using only trained personnel under an approved Hot Work Permit System. If after all elimination, preventative and/or planning activities have been completed and the hot work cannot be completed safely, the work WILL NOT be performed.

# 2. Scope

For the purposes of this procedure, hot work is defined to be any process or work that has a significant potential to start fires or cause an explosion due to the production of flames, heat, and/or sparks in the presence of flammable materials. This includes welding and non-welding activities. These activities include but are not limited to, grinding; cutting, brazing, and soldering; thawing frozen pipes by torch; non-intrinsically safe equipment (or non-explosion proof equipment) and vehicle use near ignition sources; and torch-applied roofing and welding.

This procedure applies to all GHD personnel (including contractors) who are involved with construction and maintenance activities and/or who may be involved in hot work activities. The following tasks are considered High Risk Activities and will require additional safeguards and GHD and Client Management approval: Welding on tanks, vessels, or piping (hot tapping) connected to the tank or vessel while in service.

## 3. Regulatory Background

OSHA regulations regarding hot work (brazing, welding, and cutting) can be found within 29 CFR 1910, Subpart Q – Brazing, Welding, and Cutting. Additional requirements may also be found in NFPA 51B - Fire Prevention in the Use of Cutting and Welding Processes.

# 4. Terms and Definitions

**Hazardous (Classified) Location** – An area that is classified as posing a potential fire or explosion hazards due to the presence of flammable gases or vapors, flammable liquids, combustible dust or ignitable fibers and flyings (NEC or NFPA 70). This includes any area classified as a hazardous zone area (Zone 0, 1 or 2 or Class I, Division 1 or 2) in accordance with the American Petroleum Institute Recommended Practices (API RP) 505/API RP 500 or other equivalent local standards.

**Designated Safe Hot Work Area** – A designated area identified by management that is clear of combustible, ignitable and flammable material (minimum of 50 feet or 15 m) and is free of an explosive atmosphere. Safeguards are in place equivalent to those required if a Hot Work Permit were issued.

**Explosive Atmosphere** – A mixture of flammable gases, vapors, liquids or dusts with air. (There is a potential for explosive atmospheres to develop due to the improper cleaning or preparation of tanks, vessels, pipes or equipment which previously contained such materials or may develop with an accumulation of combustible dusts).

**Hot Work** – A process or work task that has a significant potential to start fires or cause an explosion. This includes open flame or visible spark production (high energy) such as welding, brazing, cutting, burning, (gas flame soldering and grit-blasting) and non-open flame (low energy) work (e.g., chipping, chiseling, battery-operated personal electronic devices), electrical equipment/tools, pneumatic tools, iron/gun soldering, portable internal combustion engines, jack hammers, impact wrenches and any high temperature producing equipment.

**Immediately Dangerous to Life or Health (IDLH) Atmosphere** – An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would interfere with an individual's ability to escape from a dangerous atmosphere (OSHA 29 CFR 1910.120).

# 5. Roles and Responsibilities

#### HSE Team

The ultimate responsibility and authority for compliance with the Hot Work Permit Program rests with the HSE Team. It is their responsibility to ensure that the Hot Work Permit Program is carried out and performed in accordance with local, state, federal, and company standards.

### **Project Managers and Supervisors**

Individuals who have supervisory responsibility play a key role in the Hot Work Permit Program. It is their responsibility to ensure that:

- Individuals working under their direction are trained and understand the applicable provisions of the Hot Work Permit Program and that all requirements of any Hot Work Permit are fulfilled before work is performed.
- Hazardous (Classified) locations and safe hot work areas shall be designated and reviewed by the GHD PM, site supervisor and RSHM (or designee).
- Hot work shall not be performed in the presence of explosive atmospheres.
- Alternative measures are considered which may include:
  - Using cold cutting or cold repair techniques.
  - Replacing rather than repairing.
- Properly trained fire watchers are assigned when required by the Hot Work Permit.
- Employees performing hot work (and their supervisors) are required to be suitably trained in the safe operation of the equipment.
- The work area is inspected prior to authorizing hot work and indicates the precautions to be taken in the form of a written work permit.
- All subcontractors are advised about flammable materials or hazardous conditions of which they may not be aware in areas where they will be working.
- Outside contractors and service personnel are informed of the expectation that they will follow all OSHA requirements, including obtaining a Hot Work Permit, if applicable to the work being performed.
- Prior to the commencement of any welding fabrication, the supervisor or project manager responsible for the work shall ensure that welders are qualified to perform each welding procedure to be used. Welder qualifications vary as to type of welding process, position and type of material, and equipment to be welded/fabricated. Welders without proper qualifications will not be used for equipment fabrication or repairs. It is best to plan the work in advance to ensure qualified personnel are available.

### Individuals Performing Hot Work

Individuals performing the hot work play what is perhaps the most important role in the program. They are responsible for:

- Obtaining written approval from their RSHM or from their supervisor or project manager for hot work conducted on field projects or using hand-held torches in laboratory projects.
- Ensuring that conditions are safe and hazard free before commencing the hot work.
- Being prepared to contact their supervisor/project manager should conditions change or warrant reassessment during the hot work project.
- Using appropriate PPE while performing hot work (welding helmets, gloves, jackets, aprons, etc.).
- Completing the appropriate section(s) of the Hot Work Permit.
- Returning the completed Hot Work Permit to the supervisor or project manager.

#### Fire Watchers

Fire watchers are required by OSHA and are responsible for:

- Being aware of the inherent hazards involved in the hot work
- Ensuring that safe conditions are maintained during the hot work
- Recognizing the conditions that require a fire watch:
  - Slag, weld splatter, or sparks might pass through an opening and cause a fire.
  - Fire-resistant guards or curtains are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads.
  - Combustible material closer than 35 ft. (10.7m) to the hot work in either the horizontal or vertical direction cannot be removed, protected with flame-proof covers, or otherwise shielded with metal or fire-resistant guards or curtains.
  - The hot work is carried out on or near insulation, combustible coatings, or sandwich-type construction that cannot be shielded, cut back, or removed, or in a space within a sandwich type construction that cannot be inerted.
  - Combustible materials adjacent to the opposite sides of bulkheads, decks, overheads, metal partitions, or sandwich-type construction may be ignited by conduction or radiation.
  - The hot work is close enough to cause ignition through heat radiation or conduction on the following:
    - o Insulated pipes, bulkheads, decks, partitions, or overheads;
    - Combustible materials and/or coatings;
  - The work is close enough to unprotected combustible pipe or cable runs to cause ignition.
- Ensuring that appropriate fire extinguishers are readily available
- Knowing how to report a fire or other emergency situation
- Monitoring any needed adjoining areas (above the work area, below the work area, on the
  opposite sides of any walls in the work area)

- Maintaining the watch for at least 60 minutes after the work is completed. The duration of the fire watch should be verified by the GHD PM as the duration may increase due to Client Policy requirements.
- Using the appropriate PPE
- Completing of the appropriate section of the Hot Work Permit once the work is done

#### **Equipment Managers**

Equipment managers are responsible for ensuring that:

- Cutting or welding equipment is maintained in a safe operating condition. Torches, regulators, pressure reducing valves, and manifolds must be UL listed or FM approved.
- Oxygen fuel gas systems (e.g., oxygen/acetylene welders) are equipped with listed and/or approved backflow valves and pressure relief devices.

# 6. Personal Protective Equipment (PPE)

- Helmets or hand shields shall be used during all arc welding or arc cutting operations
- Helpers or fire watchers shall be equipped with proper eye protection
- Goggles or other suitable eye protection shall be used during all gas welding or gas cutting operations
- All operators and helpers of resistance welding or brazing shall use goggles or face shields
- Workers adjacent to arc welding shall be protected from the rays by screens or shields
- Gloves, aprons, and other protective gear shall be worn to protect against recognized hazards
- · First aid equipment/supplies will be on available during any hot work being performed

## 7. Hot Work Procedures

#### Hot Work Permit Forms

The Hot Work Permit (attached to the end of this section) is the GHD-approved permit system. It should be noted that GHD Clients may require that additional safe work permitting procedures be completed prior to initiating work activities.

A Hot Work Permit shall be required for hot work activities inside a Hazardous (Classified) Location. A Hot Work Permit will NOT be required for hot work activities performed inside of a designated safe hot work area. Once identified as a safe hot work area; radios, flashlights, phones, cameras, battery-operated pumps, computers, etc. may be used. The specific location and the rationale for determining the area to be a safe hot work area is to be documented by the GHD PM and/or supervisor.

The hot work permit is only good for the date(s) and time specified on the permit.

### **Prior to Hot Work**

Several tasks must be performed prior to hot work, including, but not limited to:

- Consider cold work alternative measures that could be used prior to undertaking the hot work.
- Surveying the area for potential migration of fumes into breathable air zones. For hot work at a client site, contact the client representative or facility management to isolate the HVAC system for interior work and locate the intake vents on the exterior of the building for outside work. Contact the GHD office manager and/or equipment manager for hot work performed at a GHD office. In some cases, the building owner may need to be alerted to hot work activities at the site (e.g., GHD warehouses). Ensure that ventilation plans address all potential hazardous vapor sources, including routing the vent discharges away from the hot work activities or isolating the input source to the vents.
- Perform a hazard analysis of the planned work activities to identify significant potential hazards, the need for special processes such as gas testing, the need for additional permits (excavation, confined space, general work, etc.), evaluate if Simultaneous Operations will be an issue, and identify and evaluate precautions to ensure that work is conducted safely.
- Determine if gas testing (air monitoring) is required. Gas testing shall be required for hot work where there is a potential for flammable gases (explosive atmospheres), immediately dangerous to life or health (IDLH) atmospheres or other hazardous atmospheres.
- Develop, review and revise as needed the Job Safety Analysis forms for each task associated with the scheduled work.
- All equipment on which hot work is to be performed shall be properly isolated (including lockout/tagout where appropriate), cleaned, and purged.
- Obtain a Hot Work Permit and post at the location in a highly visible area. It should be noted that a general work permit may also be required by the Client in addition to the Hot Work Permit.
- Inspect the hot work area to identify any fire hazards.
- Inspect the tools and equipment to verify they are safe for use.
- Remove all flammable or combustible materials within a 10.5 m (35-foot) radius of the hot work. Note: This minimum distance could differ due to client specifications.
- Properly shield combustibles that cannot be removed from the area with non-combustible blankets or other non-combustible materials so that all heat, slag or sparks are contained.
- Seal all drains within affected area(s). Seal all cracks and openings through which hot sparks or slag may enter. As an alternative, a fire-resistant shield may be used to block the openings.
- Sweep floor of all loose combustible debris.
- Place non-combustible or flame-resistant screens to protect personnel in adjacent work areas from heat, flames, radiant energy, and welding splatter.
- Protect conveyer systems and sumps that may carry sparks of slag to other parts of the building.
- Post the area as needed with warning signage to warn nearby personnel of the danger.

- Convene a pre-job safety meeting between all parties directly involved and/or affected by the hot work activity including, but not limited to:
  - Specific description of anticipated activity
  - Impact on operations
  - Fire watch assignment and requirements
  - Overall review of roles and responsibilities
  - Potential hazards and appropriate control measures
  - Emergency procedures, roles, and responsibilities
  - Location of emergency medical or first aid equipment

Where applicable, alternate measures should be taken to prevent the incidental activation of the fire protection system without disabling the system. This may include relocating the equipment being worked on or isolating the sprinkler head or smoke detector from the system. The impairment must be tagged in accordance with the appropriate insurance carrier requirements. Options for isolation of the system include:

- Cover sprinkler heads directly above the hot work area with wet rags or other non-combustible materials so they will not be inadvertently triggered during the work.
- Cover smoke detectors located in close proximity of the work area.

#### During Hot Work

There are other precautions that must be taken during hot work:

- Appropriate fire extinguishing equipment shall be maintained in close proximity to the hot work for its entire duration, plus 60 minutes after completion of work.
- Combustible floors (e.g., floor tile, carpet, wood) must be kept wet during the hot work.
- Store acetylene and other fuel cylinders in a secure and upright position.
- The atmosphere shall be continuously monitored to ensure that the equipment and work area remain safe for hot work.
- Equipment and the work area shall be tested for the presence of flammable gas following any breaks or where the area has been unattended, and at points during the work which may result in a change of conditions.
- Upon detection of an unanticipated hazardous condition, including detection of flammable gas, spills or leaks, failure of ventilation, or hazards external to the work area, work shall be stopped until the area is rechecked by the on-site supervisor.
- Place hoses so that they will not be crushed or damaged.

#### After Hot Work

There are some responsibilities that must be undertaken once hot work is completed:

• The fire watch shall remain at the site for at least 60 minutes following the completion of the hot work.

- Fire extinguishing equipment must remain accessible in the area until the fire watch is secured.
- Remove covers from sprinkler heads (where applicable) immediately upon completion of the hot work.
- Remove covers from smoke detectors (where applicable) immediately upon completion of the hot work.
- Complete the appropriate section(s) of the Hot Work Permit and return the completed form to the supervisor or project manager.

#### **Prohibited Hot Work Areas**

- Areas equipped with sprinkler systems that are out of service.
- Areas, including those with confined spaces, where atmospheres of explosive gases, vapors, or dusts exist or could accumulate.
- On metal walls, ceilings, or roofs built of composite, combustible, and sandwich-type panel construction or having combustible coverings.
- On containers where flammable liquids, solids, or vapors may be present.
- On pipes that are in contact with combustible walls, ceilings, roofs, or partitions where heat by conduction can cause ignition.
- Welding, cutting, or burning of lead based metals, zinc, cadmium, mercury, beryllium, or exotic metals or paints without proper ventilation or respiratory protection.

### Gas Testing (Air Monitoring)

Gas testing shall be required for hot work where there is a potential for flammable gases (explosive atmospheres), IDLH atmospheres or other hazardous atmospheres. Requirements shall be detailed below, including but not limited to:

- 1. Gas testing is performed by a Qualified Gas Tester (including requirements for such a qualification).
- 2. Types and order of gases tested is based on work location and identified potential hazards.
- 3. Timing of initial testing, frequency and period of validity is based on work location and identified potential hazards.
- 4. Conditions under which continuous gas testing is required.
- 5. Surrounding areas that may be impacted by hot work and for which gas testing is mandatory.
- 6. Acceptability criteria for gas testing results (e.g., % LEL, % Oxygen, and other measured gases).
- 7. % LEL shall not exceed 0% when performing hot work unless approved by CHSEM.
- 8. % Oxygen shall be between 19.5% and 23.5% when performing hot work.
- 9. Operating motorized vehicles (battery or internal combustion) within areas where flammable vapors may be present.
- 10. The use of electrical or battery operated equipment or devices that are not intrinsically safe or explosion proof in a Hazardous (Classified) Location.

#### Storage of Cylinders

Cylinders (i.e., oxygen, acetylene) shall be stored at least 20 feet from highly combustible materials and where the cylinders will not be exposed to excessive rise in temperature, physical damage, or tampering by unauthorized persons.

Cylinders must be chained at all times or otherwise secured to prevent them from falling over.

Oxygen cylinders shall be separated from fuel gas cylinders or combustible materials at a minimum distance of 20 feet or by a non-combustible barrier at least 5 feet high, having a fire resistance rating of at least 1/2 hour.

#### Tanks and Drums

The preparation of a tank or drum for hot work should be considered a part of the risk assessment prior to performing work, and control measures should be identified.

#### Isolation

Tanks shall be isolated from other equipment, preferably by removing pipe sections. If possible, disconnect small tanks and remove them to a safe place. Do not rely on isolation valves; even small leaks can have serious consequences.

#### Emptying

The tank or drum should be emptied by pumping or draining the liquid into a suitable container. The residues must be disposed of in line with environmental requirements and not tipped into drains, sewers, or water courses.

#### Cleaning

In most cases, cleaning will be necessary. Cleaning methods include:

- Washing or jetting using water or detergent solutions
- Steam cleaning
- Solvent washing/jetting

Control measures will be needed to ensure that the cleaning operations are carried out safely.

#### **Gas-Freeing**

Vapors and other volatile material can sometimes be removed by blowing air or steam through the tank; this is termed "gas-freeing". The vapor concentration must be monitored using a gas detector.

Gas-freeing, on its own, is rarely adequate, as most tanks and drums will still contain liquid or solid residues trapped in seams and crevices. A gas detector may not detect these residues but they may still be capable of producing flammable vapors when heated by hot work operations.

#### Inspection

Inspecting the inside of a tank or drum that has limited openings is difficult. Mirrors and intrinsically safe lights (<32 volt) can be used, but any light used inside the tank must be "flameproof" (i.e., designed for use in flammable atmospheres).

Never assume that a tank is clean; always inspect it carefully.

A gas detector or explosimeter can be used to check for vapor, but it needs care and training to be used safely. It will not detect solid material or non-volatile liquids.

#### Inerting

Another way to reduce the risk of an explosion is to replace the air in the tank or drum by filling it with water or an inert gas, such as nitrogen. This can be useful where cleaning is difficult, although the tank should always be cleaned as much as possible beforehand.

If water is used, a vent for the steam will be necessary. Contaminated water may require specialist waste disposal.

If an inert gas is used, it can be difficult to prevent the gas escaping and air getting back in. Therefore, an oxygen meter will be needed to monitor the oxygen levels. This method should be left to a specialist.

#### **Confined Space Entry**

Welding within a designated confined space requires a Confined Space Permit in addition to the Hot Work Permit prior to performing work in a confined space. Refer to GHD's Confined Space Entry Program, located in Attachment A, for additional details regarding hot work in a confined space.

#### **Alternative Methods**

Cold cutting and cold repair methods should be used as an alternative to welding, cutting, or brazing, where practicable.

Cold cutting methods include the use of hydraulic shears or cutters and pneumatic chisels. Less common techniques include abrasive water-jetting (lancing), sandblasting, and the use of a pneumatic hacksaw. Cold repair methods involve the use of materials such as epoxy resins and fiberglass to seal cracks and holes.

#### **Oilfield Exceptions**

Vehicles and other common oilfield equipment (e.g., dynamometers, fluid level shots, etc.) may be operated within 10.0 feet of the wellhead under the following circumstances: the driver/operator will stop outside the 10.0-foot radius, exit the vehicle and perform a visual/auditory hazard assessment of the location. If there is no evidence of gas leakage from the wellhead or associated piping, the vehicle/equipment may continue to approach the wellhead. This approach should be made from the upwind direction whenever possible.

### 8. Safe Work Practices Specific to Welding

#### Electric Welding (Arc Welding and Cutting, Resistance Welding)

Employees assigned to operate arc-welding equipment must be properly instructed and qualified to operate such equipment. If gas shielded arc welding is done, the employee shall be familiar with American Welding Society (AWS) A6-1-1966 - Recommended Safe Practices for Gas Shielded Arc Welding.

- 1. Perform a safety check on all equipment:
  - Ensure fire extinguisher is charged and available.
  - Ensure electrical cord, electrode holder, and cables are free from defects (no cable splices are allowed within 10 feet of the electrode holder).
  - Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) is available and has no defects.
  - Ensure the welding unit is properly grounded.
  - All defective equipment must be repaired or replaced before use. Repairs shall be made only by a qualified person.
- 2. No welding is permitted on or near containers of flammable material, combustible material or unprotected flammable structures.
- 3. Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passers-by. (Do no block emergency exits or restrict ventilation).
- 4. Ensure adequate ventilation and lighting.
- 5. Execute Hot Work Permit procedures.
- 6. Set voltage regulator no higher than the following for:
  - Manual alternating current welders: 80 volts
  - Automatic alternating current welders: 100 volts
  - Manual or direct current welders: 100 volts
- 7. Uncoil and spread out welding cable.
- 8. To avoid overheating, ensure proper contact of work leads and connections, remove any metal fragments from magnetic work clamps (to avoid electric shock, do not wrap welding cables around a body part, and avoid welding in wet conditions).
- 9. Fire watch. The fire watch shall be in effect through the work being performed, and for 60 minutes after completion of the work, and until all welds are cooled.
- 10. If welding is being performed on a metal or combustible wall where conduction or radiant heat may cause fire, a fire watch shall be established on the other side of the work area. This will require at least two personnel on hand during and after the work has been completed.
- 11. Perform final fire watch and terminate permit.

#### Gas Welding

Employees in charge of the oxygen or fuel-gas supply equipment, including generators and oxygen or fuel-gas distribution piping systems, shall be instructed and judged competent for this work before being left in charge. Rules and instructions covering the operation and maintenance of fuel-gas supply equipment must be readily available.

- Perform a safety check on all equipment:
  - Welding fuel-gas cylinders shall be placed with valve end up whenever they are in use.
     Liquefied gases shall be stored and shipped with the valve end up.
  - Cylinders shall be handled carefully. Rough handling, knocks, and falls are liable to damage the cylinder, valve or safety devices and result in leakage.
  - Ensure tanks have gas and fittings are tight. Cylinders with defective safety devices or leaking fuse plugs must be tagged and the supplier notified. Warning signs must be posted around the area to prohibit approach of an ignition source.
  - Ensure fire extinguisher is charged and available.
  - Ensure hoses have no defects.
  - Connection of a regulator to a cylinder valve must use the "cracking" method away from possible sources of ignition and while standing to one side of the outlet.
  - Ensure PPE (welding hood, gloves, rubber boots/soled shoes, aprons) is available and has no defects.
  - All defective equipment must be repaired or replaced before use.
- Remove flammables and combustibles:
  - No welding is permitted on or near containers of flammable material, combustible material, or unprotected flammable structures (i.e., 35-foot clearance).
  - Place welding screen or suitable barricade around work area to provide a fire safety zone and prevent injuries to passers-by. (Do not block emergency exits or restrict ventilation).
- Use an authorized air filtering respirator, if required.
- When there is a chance of producing hazardous fumes, gases or dust, ensure adequate ventilation, respiratory protection and lighting are available.
- Hot Work Permit procedures.
- Open valves on oxygen and gas tanks to desired flow.
- Shut tank valves and relieve hose pressure. Store hoses.
- Fire watch:
  - The fire watch shall be in effect through the work being performed, and for 60 minutes after completion of the work, and until all welds having cooled.
  - If welding is being performed on a metal or combustible wall where conduction or radiant heat may cause fire, a fire watch shall be established on the other side of the work area. This will require at least two personnel on hand during and after the work has been completed.

- Perform final fire watch and terminate permit:
  - The hot work area must be monitored for 4 hours after the work has been completed. A final walk through of the area shall be performed to ascertain that all hazards or potential fire hazards are abated. Once this determination is made, the supervisor will terminate the permit.

#### **General Welding/Cutting Requirements**

- No welding/cutting or other hot work shall be performed on used drums, barrels, tanks, or other containers until they have been cleaned so thoroughly as to make absolutely certain that there are no flammable materials present or any substances such as greases, tars, acids, or other materials which, when subjected to heat, might produce flammable or toxic vapors.
  - All hollow spaces, cavities, or containers shall be vented to permit the escape of air or gases before pre-heating, cutting, or welding.
  - In the case of overhead welding, hoses and cables shall be clear of passageways, ladders, and stairways. The welder shall be protected against falling, accomplished by the use of railing, safety belts, life lines, or any other effective safeguard.
  - Special considerations shall be taken when welding operations require fluxes, coverings, coatings, alloys, etc., involving fluorine compounds, zinc, lead, beryllium, cadmium, or mercury. Special signage may be necessary. When in doubt, refer to OSHA 29 CFR 1910.252 (F)(5) through (10).
  - Protection from electrical shock is required while welding in wet conditions.
  - Electrode lead cables and hoses shall be inspected frequently. Cables with damaged insulation or exposed conductors shall be replaced.
  - Cylinders containing oxygen or acetylene or other fuel or gas shall not be taken into confined spaces.

### 9. Training

#### Individuals Performing Hot Work and Fire Watch

All GHD employees performing hot work or acting as fire watch, and their supervisors, must be trained in order to conduct hot work activities. The training shall contain at a minimum the following topics:

- What starts hot work fires and explosions and how they can be prevented
- Review of hot work policy, key definitions, procedures, and roles and responsibilities
- Proper operation and maintenance of applicable gas testing (air monitoring) equipment
- Safe operation and shutdown of equipment
- The use of fire extinguishing equipment
- How to sound the emergency alarm in the event of a fire

#### **Subcontractors**

Subcontractors are required to provide training to their employees who will be involved in performing hot work. Any project where the subcontractor fails to follow hot work procedures shall be shut down until the infraction has been corrected. All subcontractors must notify the GHD project manager (or point of contact) of any hot work that will be performed on a Client site.

### 10. Recordkeeping

#### **Hot Work Permits**

All Hot Work Permits shall be returned to the supervisor or project manager for filing. Records of Hot Work Permits should be maintained for one calendar year and are subject to GHD internal audit and client audits. Hot Work Permits on file should be reviewed for program improvement or modification purposes prior to disposal.

#### Training

Copies of training records are maintained by the GHD Institute in conjunction with the HSE Team.

## **Attachments**



# Hot Work Permit & Welding Checklist

Location (facility, well name, rig	, etc.):													
Description of Hot Work:														
I have reviewed the proposed	d work	agree	e that hot work is n	ecessary	/ and	may r	procee	d with	out unr	easonal	ble risk			
I have reviewed the proposed work, agree that hot work is necessary and may proceed without unreasonable risk. Initial authorization: Date: Expiration time:														
The following precautions mu	ct ho	takan t	a complete the we		(atta	ch dot	aile of	cnocifi	o proo			I	onria	
	1			IK Salely	(alla			-	·			ыпаррі	T	T
Check Yes NA			Check						Chec				Yes	NA
All lines depressurized?			Area/space gas free						Standby man/fire watch? Pre-job safety meeting complete?					
All liquids drained?			Combustibles remo			_				-	-			
Space cleaned and purged?			Continuous atmosp			g?			Emergency procedure established?					
Space properly ventilated?			Fire extinguisher/wa						Special PPE required?					
Lockout/tagout complete?			Respiratory protect											
Positive Isolation       NA         Blind       Double Blaced         Disconnect       Full thicknet			Electric lighting and equipment properly rated for hazardous area location			Communication Method INA Hand signal Voice Radio Horn								
PPE			Rescue Equipme	nt					Eme	rgency P	hone Num	bers		
Head: 🗌 Hardhat			Emergency Respo	nse Plan?	)				Ambi	lance/EN	MS:			
Other:			🗌 Yes 🗌 I	No	🗆 N/	A								
Eye/Face: 🗋 Safety glasses w		shie <b>l</b> ds	If no, notify outside		ervice	S			Resc	ue Servic	ces:			
Face shield Gog	gles		GPS Coordinates:											
Other:							Air Rescue:							
Arms/ Hands: Leather glove			Full body harness											
Leather gloves w/long sl	eeves		Lifeline				Fire Department:							
Other: Footwear: Leather Boots			Personnel basket       Rigid stretcher   Other:											
Clothing: Clothi	othin	a	Mechanical lift for >5 degrees vertical											
Atmospheric Testing Acceptable Conditions Time →			Results Results AM/PM AM/PM			Results AM/PM			Results AM/PM		Result AM/PN			
		_					,							
Oxygen 19.5% to Flammability <10% LE		0												
$H_2S$ <5 ppm (		)												
NORM <50 uR/t		/												
Vessel Temperature <100°F (														
Tester Signature:														
X			Initials Initials			Initials	6		Initials		Initials			
Direct Reading Monitor			Model and Unit Nu	mber:						Calibrat	tion Date:	1	/	
This permit is approved for hours on this date// Signature of person(s) performing Hot				ning Hot	Work:									
Signature of On-site Supervisor:			X											
X			Start Time: :		N									
Only the On-site Supervisor may extend the permit time (Max. 12 hours)				oure)	<u> </u>	X								
Time was extended to: hours.			ours)	X	X									
Rep. Initials:			Time: :											
Permit start time shall be the same as the initial test time.														
Cancellation of Permit						lianotur	ro of Fi		h·					
Signature of On-site Supervisor:			Date: / /			Signature of Fire Watch: X								
X			······································											
					Signature of Contract Supervisor:									
Permit Retention: 1 year or until	audite	ed			×	(								
Distribution: Original - Clier	nt Rep	resenta	tive and Work Site	Copy	- Initia	al Autho	orizatio	n						

#### Hot Work Permit and Welding Checklist, Continued

Yes/No/NA				
	All welding machines <b>shall</b> be located in an unclassified area while in use (for offshore welding, machines must be 3 m or 10 feet away from a well-bay or production area and 0.5 m or 18 inches or away from deck drains).			
	Welding machines with AC power convenience receptacles <b>shall</b> be labelled as AC power and <b>shall</b> be used with ground fault circuit interrupter (GFCI) adapters. The adapters should be placed as close to the welding machine as possible.			
	Welding machines with DC power convenience receptacles <b>shall</b> be removed or otherwise disabled and must not be used.			
	Welding machines used offshore <b>shall</b> be equipped with drip pans, shut down devices, and spark arresters.			
	All welding leads shall be grounded as close as possible to the work area.			
	All welding leads and extension cords shall be completely insulated, UL rated, and in good working condition.			
	Welding rods <b>shall not</b> be left in the electrode holder when laid down on steel decks. The stud ends <b>shall</b> be put into a container – not on the floor or deck.			
	Oxygen and acetylene bottles <b>shall</b> be separated by a or 5-foot high metal barrier, secured in a rack. Acetylene bottles shall be kept in an upright position.			
	Regulators <b>shall</b> be equipped with properly operating gauges.			
	Oxygen and acetylene hoses shall be leak-free and routed to prevent mechanical damage.			
	Oxygen and acetylene hoses <b>shall not</b> be hung on cylinders when in use.			
	Oxygen and acetylene <b>shall</b> be turned off at the cylinder valve and hoses bled anytime the equipment is not in use. Regulators <b>shall</b> be removed and protective cylinder caps put in place anytime cylinders are to be moved.			
	Acetylene pressure downstream of the regulator <b>shall</b> be kept at or below 15 psi.			
	Check valves/flame arresters shall be installed on the torch and the regulator.			
	Only friction spark devices <b>shall</b> be used for ignition of cutting torches. Due to a potential ignition source, friction sparkers shall <b>not</b> be permitted to be carried around the jobsite.			
	When lighting the cutting torch, the fuel gas valve shall be opened before opening the oxygen valve.			
	Equipment containing hydrocarbons or other flammable substances has been relocated at least 35 feet horizontally from the hot work site. Similar equipment located at a lower elevation where slag, sparks, or other burning material could fall has been relocated at least 35 feet from the point of impact. When relocation is impractical, the equipment has been either shielded or the contents rendered inert.			
	Fire resistant blankets (if used) <b>shall</b> be of a good quality and should be installed in a manner that does not create pockets or folds.			
	Instrument gas systems and devices isolated or shielded.			
On-Site Supervisor:	Date:			
Welder:	Date:			

# Appendix J Workplace Electrical Safety Program





# GHD NA - Standard Operating Procedure - HSE Workplace Electrical Safety Program - 030



### **Table of Contents**

1.	Purpo	ose 1					
2.	Scop	e	. 1				
3.	Regulatory Background 2						
4.	Terms and Definitions						
5.	Resp	onsibilities	. 9				
	5.1	Management Responsibility	. 9				
	5.2	Supervisor Responsibility	10				
	5.3	Project Manager Responsibility	10				
	5.4	Employee Responsibility	10				
6.	Elect	rical Safety Work Practices	11				
	6.1	Overview	11				
	6.2	Nonqualified Persons (EQL0)	12				
		6.2.1 Restrictions	12				
	6.3	Electrical Qualification Level 1 (EQL1)	13				
		6.3.1 Restrictions	13				
	6.4	Electrical Qualification Level 2 (EQL2)	14				
		6.4.1 Restrictions	14				
	6.5	Electrical Qualification Level 3 (EQL3)	14				
		6.5.1 Restrictions	15				
	6.6	Electrical Qualification Level 4 (EQL4)	15				
		6.6.1 Restrictions	15				
	6.7	Tasks that Require a Standby Person	16				
	6.8	Work Procedures	16				
	6.9	Electrical Tools and Equipment	16				
	6.10	Electrical Subcontractors	16				
	6.11	Electrical Personal Protective Equipment	16				
7.	Train	ing of Electrical Workers	16				
	7.1	Training Requirements	16				
	7.2	Type of Training	17				
	7.3	Nonqualified Persons	17				
	7.4	Qualified Persons	17				
	7.5	Standby Personnel					



### **Table of Contents**

	7.6	Re-training	18
	7.7	Records of Training	18
	7.8	Records of Qualification	19
8.	Auditi	ng	19

### **Table Index**

### **Appendix Index**

Appendix A	Electrical Procedures
Appendix B	Electrical Tools and Equipment
Appendix C	Electrical Contractors
Appendix D	Electrical Personal Protective Equipment
Appendix E	Auditing
Appendix F	CAL/OSHA Specific Procedures for High Voltage Electrical Exposure and Live Line Tools



### 1. Purpose

This manual identifies the underlying basis of the GHD Workplace Electrical Safety Program.

It identifies the electrical safety program covering all electrical work performed at all GHD facilities and work performed by GHD at client facilities. The procedures in the GHD Workplace Electrical Safety Program (WESP) may be supplemented to cover issues specific to individual locations, with review by GHD.

**Note:** Circuits with voltage less than 50 Volts AC and DC are not covered by this program, which is based on CSA Z462 Workplace Electrical Safety and the NFPA 70E Electrical Safety in the Workplace Standard.

### 2. Scope

This Workplace Electrical Safety Program (WESP) applies to employees working on behalf of GHD at client facilities, client work sites, GHD offices, and GHD Holding properties within Canada and the United States. It provides mandatory program requirements and shall be used in conjunction with all other procedures and practices employed on the site to help ensure that electrical work is accomplished safely. Note – for employees working in California under CAL/OSHA regulations, the procedures for high voltage electrical exposure and live line tools detailed in Appendix F supersede those included in this document and attachments.

All injuries are preventable and zero injuries must always be the goal. Sound safety practices are a condition of employment. In an interdependent safety culture such as GHD's, all people realize that each person is responsible for their own safety and for the safety of others.

The WESP includes but is not limited to the following activities:

- Developing, evaluating, and updating the Workplace Electrical Safety Program
- Ensuring only competent and qualified persons are allowed to do electrical work
- Training of electrical qualified persons
- Energy isolation including locking out, try to start, and confirming zero energy
- Using safe limits of approach boundaries to reduce exposure to electrical hazards
- Developing procedures for energized electrical work, utilizing a work permit system to include hazard analysis, risk assessment, and the use of specific personal protective equipment

Employees are not to accept unnecessary exposure to hazards.

In this program, energized shall include the following: live, alive, hot, connected, reenergized or any other term used to indicate the state of an active electrical connection.

De-energized shall include the following: dead, disconnected, zero energy or any other term used to indicate the zero energy state of an inactive electrical connection.



### 3. Regulatory Background

In the United States, both the Occupational Safety and Health Administration (OSHA) and the National Fire Protection Association (NFPA) have written regulations and standards that build on one another and help keep all workers safe from electrical hazards in the workplace. In this case, the OSHA regulations and National Electrical Code (NEC) work so well together it has been said that OSHA provides the "shall" while NFPA provides the "how". It is important to note that the NFPA 70E is a national consensus safety standard published by NFPA primarily to assist OSHA in preparing electrical safety regulations. Federal OSHA has not incorporated NFPA 70E into the Code of Federal Regulations. The standard covers the full range of electrical safety issues, including safety-related work practices, maintenance, special equipment requirements and installation. OSHA bases its electrical safety standards on the comprehensive information found in NFPA 70E. It focuses on protecting people and identifies requirements that are considered necessary to provide a workplace that is free of electrical hazards.

In Canada, CSA Z462 "Workplace Electrical Safety" is a standard prepared by the "Canadian Standards Association" and mirrors NFPA 70E with a few minor differences. This standard is enforced in Canada through Provincial OHS legislation including the "general duties clause".

As a result of U.S. and Canadian regulations, the following documents form the basis of GHD's WESP.

- 29 CFR 1926, Subpart K Electrical
  - Installation Safety Requirements (1926.402-1926.415)
  - Safety Related Work Practices (1926.416-1926.430)
  - Safety Related Maintenance and Environmental Considerations (1926.431 1926.440)
  - Definitions (1926.449)
  - Safety Requirements for Special Equipment (1926.441-1926.448)
- 29 CFR 1910 Subpart S Electrical
  - 29 CFR 1910.147 covers the control of hazardous energy and requirements for Lock-out /Tag-out when servicing and maintenance of machines and equipment
- Ontario Regulation 851, Sections 40-43, 60, 74, 75, and 76
- Ontario Regulation 213, Sections 181-195
- Ontario Fire Code, Section 2.4
- Ontario Electrical Safety Code (OESC) and Electrical Utility Safety Association (EUSA)
- Alberta Safety Codes Act Electrical and Communication Utility Code (ECUC)
- Alberta OHSA, Sections 15 and 17
- British Columbia OHSA Regulations, Part 19 and Guidelines G 19.1-19.36
- Nova Scotia OS General Regulations, Sections 120-128



- Quebec RSQ, Chapter S-2.1, Regulation 6, Sections 2.11 (Construction) and 5.1.1-5.3.1
  - (Construction)
- Newfoundland CNLR 1165/96, Sections 84-87 and 179
- Prince Edward Island OHSA, Section 36
- New Brunswick OHSA, Sections 286-296
- Saskatchewan O-1.1 Reg. 1 OHS, Part III 15 a(viii)
- Manitoba Workplace Safety & Health Regulation General Duties Part II
- Yukon OHS Act Chapter 159 1.13 (c) iii
- Northwest Territories and Nunavut Safety Act R.S.N.W.T. 1988, c.S-1 25 (e); Electrical Protection Act R.S.N.W.T. 1988 c.E-3 7 (1)

### 4. Terms and Definitions

The following definitions apply generally to the electrical safety program.

Term	Definition
Affected Worker	A worker whose job requires operating or working on systems, equipment, or machines under lockout, or working in an area where he or she could be exposed to the hazards controlled by the lockout.
Arc Thermal Performance Value (ATPV)	This value is presented in calories per square centimeter (cal/cm <sup>2</sup> ) and represents the maximum capability for arc-flash protection of a particular garment. This rating also applies to fabrics. The calories per square centimeter rating of most arc-flash protective suits, coveralls, and coats is commonly sewn into the fabric in large letters on the outside of the garment. Flame Resistant (FR) is not the same as ATPV and should not be substituted.
Authorized Worker	A worker who implements lockout procedures for equipment (including construction and maintenance activity) or service maintenance. An authorized worker must be trained in Electrical Safety procedures and OSHA standards, must have documentation of training, and must have demonstrated competency.
Barricade	A physical obstruction such as tape, cones, or A-frame-type wood or metal structures intended to provide warning about and to limit access to a hazardous area. Barricades are generally installed only temporarily.
Barrier	A physical obstruction that is intended to prevent contact with energized parts. Barriers may be installed temporarily or permanently.
Boundary, Flash Protection	The boundary within which arc flash personal protective equipment (PPE) is required. This distance may be greater or less than the limited approach boundary.
Boundary, Limited Approach	A risk of shock exists within this boundary. Unqualified persons may enter this area if they are under the supervision of a qualified worker and using proper PPE.



Term	Definition
Boundary, Restricted Approach	Qualified personnel only. Requirements are the same as if working on or near energized circuits. Insulated gloves, tools, and equipment are required within this barrier.
Bucket Truck	A vehicle that has an articulating boom with one or two bucket-type work platforms. Both the boom and bucket(s) are electrically insulated. Bucket trucks are designed to enable electricians to work on overhead electric lines.
Certified Worker	A qualified worker who has completed a training course (or has equivalent experience) relating to a specific task and specific equipment who has also demonstrated proficiency in performing the task. Documentation of the training or experience and proficiency must exist.
Checkout/Test	The checking and or testing of a circuit to ensure that it operates as designed.
Class A Ground-Fault Circuit Interrupter (GFCI)	A device whose function is to interrupt the electric circuit to the load when a fault current to ground is in the range of 4 to 6 milliamperes. Class A GFCIs are used for personnel protection.
	<b>Note:</b> The term GFCI is a Canadian term. Similar equipment is available in other countries. The term GFCI is intended to mean similar equipment that might have other names in countries other than Canada.
Classified Location	A location where fire or explosion hazards exist due to flammable gases, vapors, or liquids; combustible dust; or ignitable fibers.
Competent Person	One who is capable of identifying existing and predictable hazards in the surroundings or working conditions that are hazardous to workers, and who has authorization to take corrective measures to eliminate and or control the risks associated with the hazards.
Conductive Material	Any material suitable for carrying electrical current.
Confined Space	An enclosed space or area that:
	is large enough such that a person can bodily enter and perform work; AND
	has a limited means of egress or entry such as a tank, vessel, silo, hopper, vault, trench, pit, boiler, sewer or any other enclosed space; AND
	is not designed for continuous personnel occupancy; AND
	the potential for hazardous atmosphere.
Dead/Live Man Switch	A three position switch that de-activates or de-energizes equipment when the operator releases or fully closes his or her grip on the controls or the operator leaves the equipment. An intermediate position is the enable range
De-energized	Isolated from any electrical connection to a source of voltage and free from an electrical charge.
Electric Cables	Conductors that have factory-applied, voltage-rated insulation. Electric cables can be found in cable trays or in other raceways. Electric cables can also be suspended with a messenger or free suspended from poles, pipe bridges, or steel bents.



Term	Definition
Electric Lines	Transmission, distribution, and utility lines that consist of either bare conductors or conductors with only weatherproof covering. Conductors of this type use an external means to provide electrical insulation to ground, such as adequately rated porcelain insulators or spacers.
Electrical Hazard	A dangerous condition in which inadvertent or unintentional contact or equipment failure may result in shock, arc-flash burn, thermal burn, or blast injury.
Electrical Hazard Risk Evaluation	An analysis of each electrically hazardous task to determine the hazard and the requirements to prevent injury from the specific hazard.
Electrical Incident	An event that results from either personnel action or electrical equipment failure. An electrical incident has the potential to result in property damage or injury from the following:
	Electrical flash and/or burn
	Electrical shock (if the voltage is greater than 50 Volts)
	Reflex action to an electric shock
Electrical Safety	Recognizing hazards associated with the use of electrical energy and taking precautions so that hazards do not cause injury, death, or property damage.
Electrical Single-Line (one-line) Diagram	A record of all power sources and connections to major electrical equipment.
Electrically Hazardous Task	A task involving electrical equipment energized above 50 Volts to any reference point.
Electrically Qualified Person	EQL1, 2, 3, or 4 as defined in Section 6 of the program.
Electrically Safe Working Condition	A conductor or circuit part that has been isolated from energized parts, locked/tagged in accordance with established standards, and tested to ensure the absence of voltage (and grounded, where required) is considered electrically safe.
Energized	Electrically connected to a source of voltage or electrically charged.
Equipment, Distribution	Equipment that has as its function the delivery of electrical energy. Distribution equipment does not utilize electrical energy. Examples of distribution equipment are unit substations, motor control centers, and the power cables on the primary and secondary sides of unit substations.
Equipment Protective Device (EPD)	A device that removes voltage when the ground-fault current exceeds 30 milliamperes. This device is intended for equipment protection and must not be used for personnel protection.
Equipment, Utilization	Equipment that utilizes electrical energy for mechanical, chemical, heating, lighting, or other useful purposes.
Exposed (as applied to energized parts)	Capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated, or insulated.
Flash Hazard	A dangerous condition associated with the release of energy caused by an arc that suddenly and violently changes material(s) into a vapor.
Ground	An electrical connection to earth; an electrically continuous path to earth.



Term	Definition
Ground Cluster	An assembly of electrical conductors and connecting devices meeting consensus standard rating requirements intended for ensuring electrical conductivity between formerly energized electrical conductors and earth ground.
Grounds, Discharge	Temporary grounded bonding jumpers used for the purpose of temporarily discharging any residual voltage that might exist on a circuit that is to be worked on.
Grounds, Safety	Temporary grounded bonding jumpers used to discharge any residual voltage that might exist on a circuit that is to be worked on and to protect personnel from injury in case the circuit becomes energized. These jumpers remain connected to the circuit during the duration of the work. These jumpers shall be capable of carrying the maximum phase-to-phase or phase-to-ground fault current that the electrical system can deliver for the time required for the circuit protective equipment to de-energize the circuit.
High-Potential (Hi-Pot) Insulation Tester	An instrument used to determine the insulation integrity of electrical equipment by impressing a test voltage, variable from 1 to 100,000 Volts dc, on the equipment under test.
Hot Work	Hot work means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.
Identified	Recognizable as suitable for the specific purpose, function, use, environment, application, etc.
Incoming Supply	All conductors, cables, or rigid busswork that introduce power to a piece of equipment. The incoming supply may be the primary power supply, an alternate supply, a temporary supply, or a backfeed from other equipment.
Individual Qualified Worker Control	Individual qualified worker control applies to an electrical task where only one person is involved in a single short-duration task where the disconnecting means is immediately accessible while <i>continuously visible</i> . A disconnecting means is considered to be immediately accessible only when the operating handle is continuously within arm's reach. The disconnecting means is considered to be continuously visible when it is within unobstructed direct line of sight.
Isolation Means (disconnecting)	Load-rated switches, circuit breakers, or other devices designed as disconnecting means for the opening or closing of circuits under load conditions to provide isolation of energy.
Insulated	Separated from other conducting surfaces by a dielectric offering a high resistance to the passage of current.
Insulating Barrier	An object that provides physical separation and electrical insulation between the energized components and the person performing the task, or that provides physical protection of the equipment from the work activity.
Job Plan	A description of the nature, timing, location, and procedures of an electrical job that addresses all safety considerations. A job plan also includes the sequence of events needed to complete the scope of work safely and efficiently.
Live (Energized) Parts	Live Energized electrical conductors, buses, terminals, or components that are uninsulated or exposed and present a shock hazard.



Term	Definition	
Live-Line Tool Work	A technique of performing work on energized parts where the worker uses insulated live-line tools rated for the voltage involved to provide insulation of the person from the part on which work is to be performed.	
Lockout, Complex	<ul> <li>A complex lockout is one that is required where one or more of the following exist:</li> <li>(a) Multiple energy sources (more than one)</li> <li>(b) Multiple crews</li> <li>(c) Multiple crafts</li> <li>(d) Multiple locations</li> <li>(e) Multiple employers</li> <li>(f) Unique disconnecting means</li> <li>(g) Complex or particular switching sequences</li> <li>(h) Continues for more than one shift, that is, new workers</li> </ul>	
Lockout, Simple	A lockout is considered to be simple where it is under individual qualified worker control and is not a complex lockout.	
LOTO	Lockout/Tagout	
Manholes (Cable Vault or Cable Pit)	Any electrical or telephone underground enclosures that are used for drawn-in type underground cable-conduit systems and also for necessary access for drawing in and splicing cables or withdrawing them for repairs and alterations.	
Megger, Earth	An instrument used to determine the resistance of an electrical connection to earth. The scale of an earth Megger usually is graduated in ohms.	
Megohm Insulation Tester (Megger™)	An instrument used to determine the insulation integrity of electrical equipment by impressing a test voltage, generally limited to 5,000 Volts dc, on the equipment under test.	
Mobile Equipment	Cranes, dump trucks, drag lines, backhoes, forklifts, power shovels, powered manlifts, mobile scaffolds, boring machines, drilling equipment, and other pieces of construction equipment capable of being boomed up or out, traversed, or extended.	
Nonelectrical Work	Activities, such as painting, erecting scaffolds, sand blasting, carpentry, or yard maintenance, that do not involve electrical work.	
Person-in-Charge	An employee who is responsible for specific electrical work.	
Person-in-Charge (Lockout/Tagout)	An employee who is specifically appointed with overall responsibility for a lockout/tagout to ensure that all energy sources are under lockout/tagout and to account for all persons working on the job/task.	
Philosophy	The most general beliefs, concepts, and attitudes of an individual or group.	
Policy	A definite course or method of action selected from among alternatives and in light of given conditions to guide and determine present and future decisions.	
Potentially Energized Equipment	Equipment or components that have been or can be energized or any equipment or component that is physically connected to a power source. All require a lock and tag for electrical isolation.	
Pre-energized Checkout	A check accomplished without applying operating power to the equipment. This includes point-to-point wiring checks and Megger checks.	
Principle	A rule or code of conduct.	



Term	Definition
Procedure	The act, method, or manner of proceeding in some process or course of action.
Qualified Person	A person who has received training and is knowledgeable of the construction and operation of equipment or a specific work method, and one who is trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or work practice. Qualified electrical workers must demonstrate the proper use of (not just be familiar with) special precautionary techniques, PPE including arc flash suits, insulating and shielding materials, and insulated tools and test equipment. The term "qualified" does not relate to job title or job assignment, but to the activity being performed. (See Section 6, "Electrical Safety Work Practices" for qualification requirements.)
QTL	Qualified Technical Leader
QTPR	Qualified Technical Peer Reviewer
Risk Assessment	The overall process of hazard identification, risk analysis, and risk evaluation.
Scope of Work	A description of the work to be accomplished, including the physical boundaries of the work.
Shock Hazard	A dangerous condition associated with the release of energy caused by contact or approach to energized parts.
Site Manager	The representative at the site responsible for all site activities.
Small Portable Generator	A mechanically driven electrical generator, usually 10 kW or smaller, used to supply temporary convenience power for an operation.
Standby Person	A person who has no assignment for a particular task other than to observe the actions of the craftsperson performing the task. The standby ensures that the person performing the task is aware of the potential hazards and necessary safeguards associated with his or her performance of the task. The standby must also know how to respond to any potential emergency. An assistant who observes an area that the test operator cannot see to prevent anyone from approaching the equipment under test.
Step Potential	A ground potential gradient difference that can cause current flow from foot-to-foot through the body.
Touch Potential	A ground potential gradient difference that can cause current flow from hand-to-hand or hand-to-foot through the body.
Transient Voltage Surge Suppressor	A protective device for limiting transient voltages by diverting or limiting surge current; it also prevents continued flow of follow current while remaining capable of repeating these functions and is designated as follows: Type 1: Permanently connected SPDs intended for installation between the secondary of the service transformer and the line side of the service disconnect overcurrent device. Type 2: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device. Type 2: Permanently connected SPDs intended for installation on the load side of the service disconnect overcurrent device, including SPDs located at the branch panel. Type 3: Point of utilization SPDs. Type 4: Component SPDs, including discrete components, as well as assemblies. Informational Note: For further information on Type 1, Type 2, Type 3, and Type 4 SPDs, see UL 1449, Standard for Surge Protective Devices.
Unqualified Person	A person who is not a qualified person.



Term	Definition	
Voltage (Potential)	Electromotive force or potential difference expressed in Volts. For the purposes of this procedure, voltage reference for ac is phase to any other reference and for dc is positive (+) to negative (-).	
Voltage-Rated A technique of performing work on energized parts where the worke utilizes voltage-rated insulating gloves, with sleeves if necessary, ra the voltage involved to provide insulation of the person from the energiated part on which work is to be performed.		
Voltage Testing	A task intended solely to detect the presence or absence of voltage.	
Voltage to Ground	tage to Ground The voltage between the given conductor and that point or conductor of the circuit that is grounded.	
Welding Leads A set of electrical conductors connected to the welding source the welding voltage to the work. Welding leads consist of two individu conductors (a work lead and a work-return lead).		
Work Class, Work associated with analyzing circuit conditions and equipment. Diagnostic		
Work Class, Limited Any work other than prohibited or restricted work that requires con objects or body parts to enter the limited work space surrounding parts.		
Work Class, Restricted	Any work that requires body parts or conductive objects to enter the restricted working space surrounding energized parts.	
Work Class, Prohibited	Any work that requires intentional hand, body, or tool contact with energized parts or any work that requires approaching energized parts with conductive objects or unguarded body parts closer than the prohibited approach boundary.	
Work Class, Testing	Checking for the presence or absence of voltage.	
Worker	Any person performing work, either a GHD employee, a GHD contract employee, or a sub-contractor employee.	
Working Near	Any activity inside the limited approach boundary.	
Working On (De-energized)	Coming in contact with parts that are in an electrically safe working condition.	
Working On (Energized)	Coming in contact with energized parts with the hands, feet, or other body parts or with tools, probes, or test equipment, regardless of the personal protective equipment a person is wearing.	
Zero Energy	Isolated from any potential energy source (including hydraulic, gravity, electrical, kinetic, etc.)	

### 5. **Responsibilities**

Each person must set an example by demonstrating the appropriate attitude and behavior toward safety leadership and stewardship by applying GHD's Behavior Based SMART Program elements.

#### 5.1 Management Responsibility

Management's role is to continue to demonstrate its support and commitment to creating the safest workplace possible by attitude and personal conduct, and by adequately funding the safety



programs. Management believes all incidents are preventable and the company's mission is to strive toward the goal of zero injuries. Management's attitude toward safety is reflected in their commitment to a safe workplace.

Management is expected to do the following:

- Eliminate recognized safety hazards where possible or implement adequate risk mitigation controls associated with the identified hazards that cannot be eliminated
- Produce, control and implement applicable safety procedures
- Produce, control and implement the use of safe work practices
- Provide training, instruction, supervision, discipline, and recognition

#### 5.2 Supervisor Responsibility

Each supervisor should empower the people under his or her direction to be proactive in continuously improving his or her own safety and the safety of others. Supervisors shall ensure that the people under their direction have the necessary knowledge and skills to recognize and report hazards and complete assigned tasks safely. Supervisors shall also ensure that their staff know their technical limits and stay within these limits.

#### 5.3 **Project Manager Responsibility**

Due to the diverse nature of GHD's projects, work locations, and client requirements, it is the responsibility of each Project Manager to ensure electrical hazards are identified, work activities are defined, and general procedures are determined as applicable to the specific project and ensure the project team members are informed with respect to:

- Existing client rules, regulations, and procedures
- Existing documentation, drawings, and technical literature pertaining to electrical systems
- Proposed scope of work that will be affected by potential electrical hazards
- Access to technical experts within GHD for referral of electrical issues beyond the capability of the team members
- Advise the client of any unique hazards presented by the work being performed
- Advise the client of any unanticipated hazards found during the work that the client did not mention
- Advise the client of the measures the contractor took to correct any hazards reported to prevent such hazards from recurring in the future

#### 5.4 Employee Responsibility

Each person's attitude toward safety is reflected in his or her behavior. Safe behavior is the most effective risk control that a worker can contribute to the overall safety program.



Each employee is expected to do the following:

- Adopt applicable personal principles as defined in the WESP
- Avoid exposure to safety hazards
- Report all safety hazards using Stop Work Authority, Unsafe Act and/or Unsafe Conditions system
- Report and/or correct, to the limit of their knowledge or ability, any hazards
- Know, understand, and use applicable safety procedures as tools to guide all tasks
- Follow policies, procedures and use safe work practices
- Apply knowledge from training to your actions
- Do not exceed your restrictions or your ability
- Do not perform energized work outside predetermined Incident Energy Category values and Voltage Restrictions
- Do not perform energized work on incoming power distribution electrical systems and transformers; this work is performed by approved external contractor resources that are reviewed by the HSE Team using the Vendor Prequalification Process
- Do not perform energized work repair and exchange
- Limit energized work to diagnostic, troubleshooting and testing
- Isolation means: only use load-rated switches, circuit breakers, or other devices designed as disconnecting means for the opening or closing of circuits under load conditions to provide isolation of energy
- Where possible reduce or eliminate the load on isolation means prior to opening or closing of circuits
- Understand and follow the specific Task Restrictions. Do not perform tasks beyond permitted work, based on the employee specific trained qualification level

### 6. Electrical Safety Work Practices

#### 6.1 Overview

The premise of the WESP is that employees must only conduct electrical related work in accordance with their training and qualifications referred to as their Electrical Qualification Level (EQL). These are internal categories selected by GHD based on work descriptions.

The following EQL categories of employees include:

- Non-qualified (EQL0)
- Electrical Qualification Level 1 (EQL1)
- Electrical Qualification Level 2 (EQL2)



- Electrical Qualification Level 3 (EQL3)
- Electrical Qualification Level 4 (EQL4)

Employees are restricted to performing electrical work within their EQL.

All employees must refer to Appendix A – Electrical Procedures.

#### 6.2 Nonqualified Persons (EQL0)

EQL0 personnel include all staff not qualified as EQL1, EQL2, EQL3, or EQL4. They may:

- Operate identified load-rated disconnecting means for routine opening and closing of electrical circuits under normal conditions
- Reset a tripped, a 15 amp circuit breaker for lighting or outlet one time only (If the overload device trips a second time, a qualified person must ensure that the circuit may be safely reenergized)
- Use temporary extension cords
- Reset a circuit Breaker supplying 120/208 Volt lighting and/or receptacles- one time only
- Reset Ground Fault Circuit Interrupters GFCI circuits one time only
- Plug or unplug 120 Volt cords into receptacles
- Change 120 Volt incandescent lamps with power off not fluorescent lamps

#### 6.2.1 Restrictions

Nonqualified workers shall not be permitted to do the following:

- Enter a Restricted or Prohibited approach boundary
- Reenergize a circuit if a circuit breaker trips a second time
- Replace fuses
- Open any electrical panel where exposure to energized parts is possible
- Reset overloads where exposed energized parts or conductors are present
- Enter a Limited Approach or Flash Protection Boundary unless supervised by a qualified worker and proper PPE is worn or if the electric conductors and equipment involved are in an electrically safe work condition
- Enter substation areas unless they are supervised by a qualified worker, and approved by management
- Do any demolition, intrusive work, or excavation with hand tools or mechanical equipment where the potential for concealed utilities is possible without a thorough search for utilities is conducted, according to GHD Utility Locate protocols



#### 6.3 Electrical Qualification Level 1 (EQL1)

Workers qualified to EQL1 are designated persons approved by GHD management based on skills knowledge, and experience, e.g., Engineers, Maintenance Staff, Technicians and Technologists, and all personnel performing lockout/tagout. They are:

- Required to restrict EQL0 persons to work within their qualification level
- Required to use PPE and wear it in accordance with training, hazards, and risks with respect to warning labels
- Based on Incident Energy, permitted to use an approved Multimeter (CAT III 600 Volt minimum) to verify zero energy
- Permitted to operate a single phase or three phase disconnect with load off for isolation and lockout purposes; turn control circuit off first to isolate load
- Permitted to plug in communications cables within electrical panels with power off after Zero Energy verification has been completed
- Permitted to reset a circuit breaker or overload one time only with the power de-energized and locked out as required by procedures
- Trained to understand when they need to cease work and ask for EQL2 support
- Able to eventually be qualified to move to a higher level
- Allowed to enter a Limited Approach Boundary adhering to Attachment 2 of Appendix A requirements

#### 6.3.1 Restrictions

- Not allowed to work on panels rated Hazard Risk Category 1 (4 cal/cm<sup>2</sup>) or 750 V or greater
- Not allowed to perform any testing and troubleshooting on energized equipment except to test for Zero Energy
- Not allowed to replace defective components that are de-energized except for fuses that are not greater than 30 amps/600 V, one time only
- Not allowed to enter a Restricted or Prohibited Approach Boundary
- Not allowed to enter a Flash Protection Boundary unless supervised by a qualified worker and proper PPE is worn
- Do any demolition, intrusive work, or excavation with hand tools or mechanical equipment where the potential for concealed utilities is possible without a thorough search for utilities is conducted, according to GHD Utility Locate protocols
- Not allowed to complete Arc Flash Risk Assessments.



#### 6.4 Electrical Qualification Level 2 (EQL2)

Workers qualified to EQL2 are designated persons approved by GHD management based on skills knowledge, and experience, e.g., Engineers, Maintenance Staff, Technicians and Technologists, PLC Programmers. They are:

- Required to restrict EQL0 and EQL1 persons to work within their qualification level
- Required to use PPE and wear it in accordance with training, hazards, and risks with respect to warning labels
- Permitted to disconnect devices rated no greater than 40 cal/cm<sup>2</sup> while wearing Category 4 PPE
- Permitted to perform all EQL1 tasks and the following additional specific tasks
- Permitted to perform testing and troubleshooting on energized Motor Control Centers (MCCs) and Electrical Control Panels (ECPs)
- Permitted to replace electronic components, e.g., PLC cards and instruments (Note: This is not an exhaustive list)
- Permitted to adjust equipment keypads, i.e., Human Interface Modules (HIMs) inside panels on drives and controllers
- Permitted to plug in communications cables with power on
- Able to be eventually qualified to move to a higher level

#### 6.4.1 Restrictions

- Not allowed to work on energized panels rated Hazard Risk Category 3 (25 cal/cm<sup>2</sup>) or 750 V or greater
- Not allowed to enter the Prohibited Approach Boundary
- Not allowed to perform energized work on power and distribution equipment
- Do any demolition, intrusive work, or excavation with hand tools or mechanical equipment where the potential for concealed utilities is possible without a thorough search for utilities is conducted, according to GHD Utility Locate protocols

#### 6.5 Electrical Qualification Level 3 (EQL3)

Workers qualified to EQL3 are qualified trades millwrights or designated persons approved by GHD management based on skills knowledge, and experience. They are:

- Required to restrict EQL0, EQL1 and EQL2 persons to work within their qualification level
- Required to use PPE and wear it in accordance with training, hazards, and risks with respect to warning labels
- Allowed to perform all EQL1 and EQL2 tasks and the following additional specific tasks



- Permitted to operate disconnect devices rated no greater than 40 cal/cm<sup>2</sup> while wearing Category 4 PPE
- Permitted to exchange like for like components, e.g., motors, contactors starters, control relays, control buttons, timers, and other components approved by GHD management (Note: This is not an exhaustive list)
- Able to be eventually qualified to move to a higher level

#### 6.5.1 Restrictions

- Not allowed to work on energized panels rated Arc Flash Category 3 (25 cal/cm<sup>2</sup>) or 750 V or greater
- Not allowed to disconnect devices rated at >40 cal/cm<sup>2</sup>
- Not permitted to perform energized work on power and distribution equipment
- Do any demolition, intrusive work, or excavation with hand tools or mechanical equipment where the potential for concealed utilities is possible without a thorough search for utilities is conducted, according to GHD Utility Locate protocols

#### 6.6 Electrical Qualification Level 4 (EQL4)

Workers qualified to EQL4 are qualified electricians, electrical engineers or designated persons approved by GHD management based on skills, knowledge, and experience. They are:

- Required to restrict EQL0, EQL1, EQL2 and EQL3 persons to work within their qualification level
- Required to use PPE and wear it in accordance with training, hazards, and risks with respect to warning labels
- Allowed to perform all EQL1, EQL2 and EQL3 tasks and the following additional specific tasks
- Permitted to disconnect devices rated no greater than 40 cal/cm<sup>2</sup> while wearing Category 4 PPE
- Allowed to work on all energized equipment including power and distribution equipment
- Designated as support resources for EQL1, EQL2, and EQL3 when those workers reach their EQL limitations
- Only allowed to work within the restriction of their trade qualification in their jurisdiction, voltage, and Incident Energy restrictions
- Allowed to complete Arc Flash Risk Assessment on energized panels rated Hazard Risk Category 3 (25 cal/cm<sup>2</sup>) or 750 V or greater

#### 6.6.1 Restrictions

- Not allowed to disconnect devices rated at >40 cal/cm
- Not allowed to perform any other work on energized panels rated Hazard Risk Category 4 (40 cal/cm<sup>2</sup>) or 750 V or greater with the exception of completion of Arc Flash Risk Assessment.



• Do any demolition, intrusive work, or excavation with hand tools or mechanical equipment where the potential for concealed utilities is possible without a thorough search for utilities is conducted, according to GHD Utility Locate protocols

#### 6.7 Tasks that Require a Standby Person

The following are examples of tasks that require a standby person:

- Any work requiring an Energized Work Plan or as specifically required in Appendix A Electrical Procedures including Arc Flash Risk Assessment
- High-potential (hi-pot) testing
- Other high risk activities
- Working in confined spaces

#### 6.8 Work Procedures

As an integral part of the WESP, procedures for undertaking electrical work have been developed. These procedures are incorporated into Appendix A – Electrical Procedures. Workers must also consider other GHD policies, such as Excavation Safety, Control of Hazardous Energy Lock-Out/Tag-Out (LOTO), Confined Space, etc.

#### 6.9 Electrical Tools and Equipment

In the performance of their work, electrically qualified workers (EQL1 through EQL4) are required to use specialty electrical tools and safety equipment. Appendix B – Tools and Equipment defines the requirements pertaining to these items.

#### 6.10 Electrical Subcontractors

From time to time, GHD may elect to use electrical contractors to perform electrical work. This work could be for the supply, installation, maintenance, repair, commissioning or energization of electrical systems. Appendix C - Electrical Contractors defines the requirements for electrical sub-contractors.

#### 6.11 Electrical Personal Protective Equipment

In the performance of their work, electrically qualified workers (EQL1 through EQL4) are required to use specialty personal protective equipment. Appendix D – Personal Protective Equipment defines the requirements pertaining to these items.

### 7. Training of Electrical Workers

#### 7.1 Training Requirements

The training requirements contained in this section apply to workers who may be exposed to work activities associated with electrical energy. Such workers shall be trained to understand the specific hazards associated with electrical energy. They shall be trained in safety-related work practices and



procedural requirements as necessary to provide protection from the electrical hazards associated with their respective job or task assignments. Workers shall also be trained to identify and understand the relationship between electrical hazards and possible injury. Workers shall also be trained with respect to the requirements, permissions and restrictions for their respective EQLs.

The training program includes information related to electrical hazards, how a person is exposed to electrical hazards, how a person protects himself or herself from exposure to injury, and how to use procedures to execute required work activities.

#### 7.2 Type of Training

Training will consist of practical experience and classroom instruction.

#### 7.3 Nonqualified Persons

This section defines training requirements and training mechanisms necessary to provide understanding for unqualified workers to avoid injuries from electrical energy.

All nonqualified workers shall receive training to improve their understanding of electrical hazards. Any training provided must also include information about how to avoid exposure to the hazard. Nonqualified workers shall be trained to recognize the limitations of their own ability.

#### 7.4 Qualified Persons

A qualified person shall be trained and knowledgeable of the construction and operation of equipment or a specific task as it pertains to their qualification level. He or she shall also be trained to recognize and avoid the electrical hazards that may be present with respect to that equipment or task.

Such persons shall also demonstrate the proper use of the following:

- Special precautionary techniques
- Personal protective equipment (PPE) including arc flash suits
- Insulating and shielding materials
- Insulated tools and test equipment

A person may be considered qualified with respect to certain equipment and methods but still be considered unqualified for other equipment and methods. Persons permitted to work on or near energized parts shall also, at a minimum, be trained in the following:

- The skills and techniques necessary to distinguish exposed energized parts from other parts of electric equipment.
- The skills and techniques necessary to determine the nominal voltage of exposed energized parts.
- Safe approach distances and the corresponding voltages to which the qualified person will be exposed.



• The decision-making process necessary to determine the degree and extent of the hazard, the job planning required to avoid the hazard, and the PPE necessary to perform the task safely.

#### 7.5 Standby Personnel

Standby personnel shall be trained in methods of releasing victims from contact with energized parts and in avoidance of other related electrical hazards. They shall be trained in methods of basic first aid, adult CPR, and emergency procedures as required by the authority having jurisdiction.

A person who has no assignment for a particular task other than to observe the actions of the craftsperson performing the task will be designated as a standby. The standby ensures that the person performing the task is aware of the potential hazards and necessary safeguards associated with his or her performance of the task. The standby must also know how to respond to any potential emergency.

An assistant who observes an area that the test operator cannot see to prevent anyone from approaching the equipment under test.

#### 7.6 Re-training

Non-Qualified and Qualified employees will be re-trained when any of the following occurs:

- If supervision or annual inspections indicate that the employee not complying with the safety-related work practices.
- When an employee is not complying with safety work practices or is directly involved in an Unsafe Act, Near Miss or Incident as a result of not following the procedures outlined in this WESP.
- If new technology, new types of equipment, or changes in procedures necessitate the use of safety-related work practices that are different from those that the employee would normally use.
- When workplace changes necessitate the use of this WESP.
- When an employee's change in responsibility necessitates a transfer from Non-Qualified to Qualified status.
- If he or she must employ safety-related work practices that are not normally used during his or her regular job duties.
- At intervals at no less than 3 years.

#### 7.7 Records of Training

Documentation shall be made when the employee demonstrates proficiency and maintained for the duration of the employee's employment. GHD will maintain records of training including a signed roster and track the following in a computer database:

- Name and employee number
- Date of training



- Location of training
- Name of instructor(s)
- Satisfactory completion of training

#### 7.8 Records of Qualification

GHD will establish and maintain the following records of qualification:

- Name and employee number
- Date of qualification
- EQL qualification documentation
- EQL restrictions, if any
- Satisfactory completion of training

Records may consist of a computer-based program. When required, hard-copy documentation of the current qualification status of each employee must be able to be produced.

### 8. Auditing

Audits will be completed as required by the NFPA 70E and CSA Z462 requirements. The WESP shall be audited to ensure that the principles and procedures of the program are being followed. The audit shall be conducted annually by the WESP Steering Committee. The audit shall be designed to identify and correct any deficiencies in the program that would require amendments to the WESP.

Please refer to Appendix E for information on Audit Protocols for the WESP.



# **Appendices**

GHD | NA-SOP-HSE-030 Workplace Electrical Safety Program | Rev 1 – April 2017



# Appendix A Electrical Procedures



### **Table of Contents**

1.	Plan	Planning Work on Electrical Equipment			
	1.1	Purpose	and Scope	1	
	1.2	General		1	
	1.3	Project Manager			
	1.4	Qualified Technical Leader			
	1.5	Work Plan Contents			
	1.6	Work Pla	an Detailed Procedure	4	
	1.7	Written Work Plans			
	1.8	Unwritten Work Plans		5	
	1.9	Post-Task Plan Review			
2.	Work	Working on De-Energized Systems			
	2.1	Purpose	and Scope	5	
	2.2	Complete a Shutdown Request		6	
	2.3	Establishing an Electrically Safe Working Condition		6	
3.	Warr	Warning Labels			
	3.1	Warning Label Requirements		7	
	3.2	Basic Label			
	3.3	Arc Flash Protection Boundary Labels		8	
4.	Work	Working On or Near Energized Systems			
	4.1	Energized Work Planning Process			
	4.2	Working	on Energized Equipment 50 to 240 Volts	12	
		4.2.1	Purpose and Scope		
		4.2.2 4.2.3	General Electrical Tasks		
	4.3	Working	on Energized Equipment Greater than s up to 750 Volts		
		4.3.1 4.3.2	Purpose and Scope		
		4.3.3	Electrical Tasks	16	
	4.4	Working	on Energized Equipment over 750 Volts	17	
		4.4.1	Purpose and Scope	17	
	4.5	Release	of a Worker Who is in Contact with Energized Equipment	17	
	4.6		n of Cranes, Excavators, Drill Rigs or Aerial Devices nity to Electrical Hazards	18	



### **List of Figures**

Figure 1	Arc Flash Approach Boundaries	11
i igui c i	Ale r lash Approach boundanes	

### **Attachment Index**

Attachment A-1	Sample Electrical Work Plan and Electrical Safe Work Practice Checklist

- Attachment A-2 Shock Hazard Analysis, Tables 1A and 1B from CSA Z462
- Attachment A-3 Arc Flash Analysis, Tables 4A and 4B from CSA Z462
- Attachment A-4 Energized Work Permit and Flow Chart



# **1.** Planning Work on Electrical Equipment

# 1.1 **Purpose and Scope**

This section defines individual responsibilities for planning work on electrical equipment and describes how to prepare a plan so that the work can be done safely. Job planning is required at all levels. The responsibilities involved in adequate planning cannot be delegated. This section is supplementary to the GHD Health and Safety Plan (HASP) as a written program. This applies to all GHD personnel and all subcontractors performing work on behalf of GHD.

# 1.2 General

The special hazards associated with electrical tasks intensify the need for thorough safety planning. Potential injuries include both electrocution and flash burns. Each job shall be analyzed carefully and critically for the potential of electrical exposure to ensure that safe conditions are secured before work begins.

A work plan does not necessarily have to be written, depending on the severity or complexity of the work, but it is a process that takes into account the factors that may lead to electrical incidents.

# **1.3 Project Manager**

The Project Manager is responsible for the following:

- Ensuring that the planning process is executed
- Participating in generating the work plan, if necessary
- Reviewing the work plan in cooperation with competent advisors or peer reviewers
- Communicating the work plan to the project team and other stakeholders
- Ensuring the availability of the correct tools, materials, expertise, and manpower
- Ensuring the work is executed in compliance with the work plan
- Ensuring that all personnel are trained and qualified for the work task as required by the WESP

# **1.4 Qualified Technical Leader**

The Qualified Technical Leader (QTL) is responsible for the following:

- Generating the work plan or participating in the planning process
- Identifying hazards and controlling risks using a risk assessment based upon normal operation of equipment that meets all of the following criteria:
  - Reviewing the work plan with the Project Manager and a Qualified Technical Peer Reviewer (QTPR)
  - Executing the work plan



- Stopping work and re-planning the job if conditions change

# **1.5 Work Plan Contents**

Electrical work must be divided into manageable components to facilitate proper planning. The work plan shall include a sequence of events needed to complete the scope of work safely and efficiently. The size and scope of the project will dictate the extent to which adequate work planning is required and must be relative to the complexity of the project. Work plans are usually of two varieties: (1) plans written specifically for a particular job, or (2) job plans that may take the form of a general procedure, a checklist, or a verbal work plan. The Work Plan shall include all required Job Safety Analyses (JSAs)/Job Hazard Analyses (JHAs) addressing both electrical and non-electrical hazards. The QTL who prepares the work plan shall consider the following and apply them as deemed appropriate:

#### Scope

- Define and understand the scope of the work, including the physical boundaries of the work (where the work is to start and where the work is to end)
- Determine how the electrical system is supposed to work
- Review the design drawings for accuracy, constructability, and completeness; if design changes could improve the safety of the installation, operation, and/or maintenance of equipment, bring it to the attention of the design team before beginning the work
- Decide if additional drawings, sketches, or other technical reference materials are required for clarification
- Identify the equipment or items on which work will be done; (Note: the responsibility for proper installation and maintenance is assigned to the equipment owner or the owner's designated representative)
- Identify the process or production systems that will be affected
- Identify who will be affected
- Identify all equipment that will be energized, re-energized, or de-energized during the work
- Ensure that the equipment energization state will not change during work
- Determine the voltage
- Locate the isolation disconnects
- Determine if there are any feedback loops or interlocks
- Identify additional useful and necessary related procedures, e.g., Confined Space or Fall Protection
- Include that authorized person(s) shall be responsible for removing from the work area any temporary personnel protective equipment and reinstalling all permanent barriers or covers

#### **Personnel Requirements**

• Choose personnel for the job based on their knowledge, capabilities, and EQL



- Determine if additional training is required
- Determine if a standby person is required
- Determine if the persons performing the work are qualified to operate the required tools or equipment

#### Materials, Tools and Equipment Requirements

- Identify the materials to be used
- Identify the tools and equipment required; use the appropriate tools for each job
- Review the tools and equipment manufacturer's instructions
- Ensure tools have the correct voltage insulation rating

Note: The electrical equipment owner is responsible for the documentation, installation, and maintenance of field-installed labels.

#### Scheduling

- Determine a starting date for the work, the number of workday hours, the duration of the job, and a finishing date; evaluate extended hours or long work weeks for safety implications
- Ensure team personnel are available for the work
- Ensure that the subcontractor has adequate staffing levels to fulfill the contract requirements
- Check to see if the job plan requires coordination with other trades, operational staff, maintenance staff or other vested parties

#### **Risk Assessment – Electrical**

- Identify all shock, arc flash, and arc blast hazards
- Estimate the potential severity of injury or damage to health
- Estimate the likelihood of injury occurrence or damage to health
- Ensure that all electrical parts are considered live until proven otherwise
- Determine maintenance status
- Identify the necessary personal protective equipment required
- Determine if emergency procedures or information might be required in case of an incident

#### **Risk Assessment – Other**

- Complete the GHD Hazard ID Risk Assessments Worksheet to identify all possible non-electrical hazards involved with the work, and mitigate and/or limit personnel exposure to the hazard; examples of such potential hazards include falls, chemicals, fumes, lifting and others
- Identify the necessary personal protective equipment required
- Identify what can go wrong and plan for that event



• Determine if emergency procedures or information might be required in case of an incident

#### Illumination

Employees shall not enter spaces containing electrical hazards unless illumination is provided that enables the employees to perform the work safely. Where lack of illumination or an obstruction precludes observation of the work to be performed, employees shall not perform any task within the Limited Approach Boundary of energized electrical conductors or circuit parts operating at 50 volts or more or where an electrical hazard exists.

#### **Detailed Work Sequence**

• Prepare a sequential procedure for the work

# **1.6 Work Plan Detailed Procedure**

- Brief all team members on the procedure. A job briefing should be held before starting each job and include all employees involved. The briefing should cover hazards associated with the job, work procedures involved, special precautions, energy source controls, PPE requirements, and the information on the energized electrical work permit, if required.
- Additional job briefings shall be held if changes that might affect the safety of employees occur during the course of work.
- Solicit input and advice from the team members and adjust the procedure accordingly.
- Finalize the procedure.
- Have plan reviewed by a QTPR
- Before starting each job, the QTL shall conduct a job briefing with the workers involved. The briefing shall include the following subjects as hazards associated with the job:
  - Work procedures involved
  - Special precautions
  - Energy source controls
  - Equipment and tool review
  - PPE requirements

Additional job briefings shall be held if changes occur that might affect the safety of the workers during the course of the work.

# **1.7 Written Work Plans**

An approved written work plan may be required for electrical work if the following situations are identified as a result of the LOTO process. These conditions may involve some or all of the following:

- Multiple energy sources
- Multiple crews



- Multiple trades
- Multiple locations
- Multiple employers
- Unique disconnecting means
- Complex or particular switching sequences
- Continues for more than one shift
- Overhead distribution lines
- Work where a ground strap or cluster will be required
- Work (repair or replacement of components) is planned within the limited approach boundary of exposed energized conductors or circuit parts
- An increased risk of arc flash exists (even) with doors closed and covers on
- Tasks that are not routine in nature, or performed less frequently than once per year

Please refer to the GHD Control of Hazardous Energy Program (LOTO).

# **1.8 Unwritten Work Plans**

The following tasks do not require a work plan; however, these tasks may require guidance from applicable JSAs, Programs and Procedures:

- Routine work at 750 Volts or less, de-energized and not listed in Section 1.7 above
- Testing, troubleshooting, or voltage measuring)
- Thermography and visual inspection up to the restricted approach boundary
- Access/egress with no electrical work within the restricted approach boundary
- General housekeeping up to the restricted approach area, as long as appropriate safe work practices and PPE is provided and used

### **1.9 Post-Task Plan Review**

Written work plans shall be reviewed after the job is complete to determine the adequacy of the plan. The original written plan and review comments shall be archived in the project file for future reference.

# 2. Working on De-Energized Systems

# 2.1 **Purpose and Scope**

While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both. Work on de-energized systems shall comply with GHD's Control of Hazardous Energy Program,



site-specific LOTO procedures and the Site Specific HASP. This applies to all GHD personnel and all subcontractors performing work on behalf of GHD.

Note: Circuits with voltage less than 50 Volts are not covered by this section.

# 2.2 Complete a Shutdown Request

The first consideration in all electrical work is to determine if the work can be done in a de-energized state. Justification for performing work on or near energized electrical equipment must be based upon the following requirements:

- An analysis of the hazards
- Qualification of personnel
- The reason the equipment cannot be placed in an electrically safe working condition

Rescheduling work to the next available shutdown should always be considered to avoid performing electrically hazardous work.

The QTL must seek authorization from the client representative to shut down equipment and processes associated with the electrical equipment and/or circuit. If the shutdown request is accepted, the worker shall establish an electrically safe working condition as defined in Section 2.3 and execute the work.

If the shutdown request is denied, the facility owner must provide a written explanation as to why the equipment will not be de-energized in the energized work permit. The QTL shall execute the work as per Section 3.

# 2.3 Establishing an Electrically Safe Working Condition

Any electrical circuit or conductor shall be considered energized until all of the following steps have been completed by a qualified employee:

- Identify all possible sources of voltage
- Identify and locate all disconnecting means:

Review appropriate drawings (or other equally effective means), tags, labels, and signs to identify and locate all disconnecting means. For electrical lockout/tagout, determine that power will be interrupted by a physical break and not de-energized by a circuit interlock. Make a list of disconnecting means to be locked/tagged.

Review other work activity in the area that might be impacted by the lockout to determine if other workers might be exposed to energy sources, electrical energy hazards or hazards due to lack of electricity (darkness, etc.). If any exposure is identified, use the appropriate procedure to eliminate the hazard.

 Verify possibility of a visible open point: Review disconnecting means to determine if it will be possible to verify a visible gap or if other precautions are necessary.



- Apply LOTO devices, as per GHD LOTO requirements. Capacitors, conductors, and/or any device capable of storing energy (excluding batteries) must be discharged, shorted, and grounded in addition to locking out the source of energy. (Circuits over 750 Volts require special training and shall be completed by a Qualified Contractor.)
- Use an approved and tested voltage detector to verify that all conductors and circuit parts are de-energized. Refer to Appendix B, Section 6. Identify the appropriate voltage detector required. Test for the absence of voltage at each location. Verify operation of the detector using live-dead-live procedure or in accordance with manufacturers' recommendations.
- Suitable temporary barriers, or barricades, shall be installed when access to opened enclosures containing exposed energized equipment is not under the control of an authorized person.

All work on or near electrical equipment not placed in an electrically safe condition shall be considered energized work and shall use safe work practices including an Energized Work Permit appropriate to the voltage and energy level.

# 3. Warning Labels

This section covers the warning labelling for shock and arc flash protection requirements necessary for qualified workers who perform work on a site where GHD is responsible for the health and safety of the personnel involved.

# 3.1 Warning Label Requirements

There are two main warning label requirements for compliance with the codes and standards. Both the US National and Canadian Electrical Codes require that Basic Labels and Arc Flash Protection Boundary Labels be present. These labels are required on electrical equipment the exposed energized components.

The following are examples of locations where you would expect to find these labels:

- Panel Boards
- Disconnect Switches
- Fuse Panels
- Breaker Panels
- Motor Control Centers (MCC's)
- Control Panels
- Transformers
- Generators



# 3.2 Basic Label

The basic label is in place to warn workers that shock hazards exist.



# 3.3 Arc Flash Protection Boundary Labels

Arc Flash Protection Boundary Labels provide additional information regarding Arc Flash Protection Boundaries and the safe Limits of Approach Distance. This is the label that is applied when an Arc Flash Incident Energy study has been completed and provides details in terms of the following:

- Nominal system voltage
- Arc flash boundary
- PPE Level requirements
- Arc Flash Incident Energy in Cal/cm<sup>2</sup>
- Voltage Limits of Approach:
  - Limited
  - Restricted
  - Prohibited

Existing labels must be updated if the arc flash risk assessment shows that the labels are inaccurate. The owner of the electrical equipment is responsible for the documentation, installation and maintenance of the field-marked label.

A qualified electrical engineer should assist with an arc flash risk assessment and label review when any changes are made to the distribution system, or every 5 years at a minimum.





#### Arc Flash Hazard Warning Label Explanation

- The "Flash Hazard Boundary" in inches is variable and refers to the distance the Arc Flash will emanate from the original short circuit toward the worker
- The thermal "Incident Energy" is measured in "cal/cm<sup>2</sup>"
- The "PPE" Level Arc Thermal Performance Value (ATPV) is used to select the appropriate PPE to theoretically prevent greater than second degree burns
- The "Limited Approach Boundary" -10'
- The "Restricted Approach Boundary" 12"

# 4. Working On or Near Energized Systems

# 4.1 Energized Work Planning Process

If a shutdown request is refused, the QTL shall complete:

- Work Plan (see Attachment A-1)
- Shock Risk Assessment (see Attachment A-2)
- Arc Flash Risk Assessment (see Attachment A-3)
- Energized Work Permit (see Attachment A-4)

Additionally, the QTL must verify that:

- Responsible supervision has determined that the work is to be performed while the equipment or systems are energized
- Involved personnel have, in the past 3 years, received instructions on the work techniques and hazards involved in working on energized equipment
- Suitable personal protective equipment and safe guards are provided and used

An electrically hazardous task must be analyzed considering two primary hazards—flash hazard and shock hazard. These hazards are identified by using boundaries based on energy levels. Performing work inside these boundaries requires training, planning, procedures, and PPE for flash protection and shock protection. In addition, shorting or grounding of low-voltage circuits might result in equipment damage, process upset, shutdowns, electrical burns, or explosions due to electric arcs.

#### Generate and Document a Work Plan

The QTL shall generate and document the step-by-step plan that describes the necessary activities to execute the task. The plan must address each issue described in the checklist, as illustrated in Attachment 1 to this Appendix.



#### Perform and Document a Shock Risk Assessment

Shock hazard boundaries are divided into the following categories, which identify the minimum approach distance to a live part:

#### • The Limited Approach Boundary (limited work class)

Activity or work inside this boundary must be performed by a qualified person as defined in Section 6.3 of the WESP. When there is a need for an unqualified person to cross the limited approach boundary to perform a minor task or look at equipment, a qualified person shall advise him or her of the possible hazards and ensure that the unqualified person is safeguarded. Barricades or appropriate warning signs shall be erected no closer to the live parts than the limited approach boundary.

#### • The Restricted Approach Boundary (restricted work class)

This boundary is the closest approach distance for an unqualified person. Under no circumstance shall such unqualified person be permitted to cross the restricted approach boundary. To cross the restricted approach boundary, a worker must meet the following requirements:

- a. Be a qualified person as defined in Section 6.3 of the WESP
- b. Have and understand an approved plan
- c. Use personal protective equipment appropriate for the conditions
- d. Position his or her body in a way that minimizes risk of inadvertent contact

#### Note: Limited and restricted boundaries are solely dependent upon voltage.

The QTL must perform a Shock Risk Assessment (SRA) and document the resulting work category. (See Attachment A-2 in this section).

#### Perform and Document an Arc-Flash Risk Assessment

GHD strongly prefers an engineering arc flash study be performed on sites GHD operates or manages. IEEE Std 1584-2002 (Guide for Performing Arc-Flash Hazard Calculations) is the standard for evaluating incident energies. Identifying arc flash hazards is the first step in mitigating and reducing risks and possible injuries. Properly placarding electrical equipment with incident energy and the Arc Flash PPE categories reduces uncertainty in the selection of PPE. Current limiting fuses, engineered protective barriers, proper circuit breaker settings, and equipment condition are part of the arc flash assessment and help reduce risk. Facilities that conduct an engineering analysis **must** use the results to create site-specific arc flash protection and PPE requirements. Reducing and managing incident energy exposure through engineering analysis can significantly impact and potentially reduce the required PPE for performing tasks from electrical equipment, a benefit that cannot be gained using the task tables and charts.

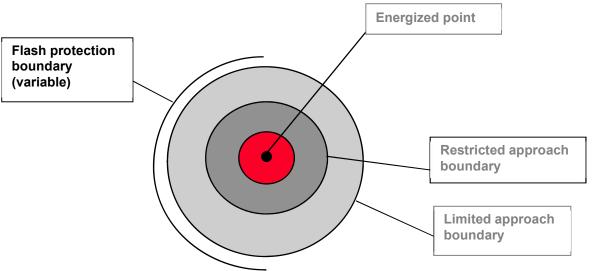
If an arc flash study and placarding have not been performed, then the NFPA 70E and CSA Z462 tables must be used by a qualified person to assess the panel category rating and to select proper PPE based on the category rating. This process always involves starting with the Hazard/Risk



Assessment and selecting proper PPE as required in NFPA 70E tables 130.7 (C), CSA-Z462 and as per GHD's training program.

Note: The tables may only be used if the specific task to be performed appears in the tables and if the system meets the listed criteria for short circuit protection. If the task does not appear in the table, or if the system does not meet the criteria found in the tables, then the tables cannot be used, then an engineering analysis must be performed to determine what level of arc flash protection will be required.

When working on or near electrical equipment with live parts, the distance to the outer limit of this boundary must be determined by a flash-risk assessment based on the energy level for that part of the system. Any person inside this boundary must wear flash protection equipment to protect any part of the body exposed to the flash hazard.



#### Figure 1 Arc Flash Approach Boundaries

# Note: Flash protection boundary dimension must be calculated based upon the amount of available energy.

The QTL must perform a flash-risk assessment and document the resulting arc flash boundary.

**Exceptions:** If values have been established through engineering analysis or if the equipment has been labeled with the flash-protection boundary and the hazard/risk category established, a flash-risk assessment need not be performed.

#### **Complete an Energized Work Permit**

The QTL shall complete an Energized Work Permit (see Attachment A-4). All Energized Work Permits shall be kept on file for documentation and audit purposes. A standby person is required for all work requiring an Energized Work Permit.

Note: An energized work permit is not required for work performed on or near live parts when qualified persons are performing tasks such as testing, troubleshooting, or voltage



measuring; thermography and visual inspection up to the restricted approach boundary; access/egress with no electrical work within the restricted approach boundary; and general housekeeping up to the restricted approach boundary. Only a qualified person who is trained to understand the following shall perform these tasks:

- Must be competent in understanding the associated hazards.
- Proper selection and use of test instruments.
- Work methods.
- Selection of the proper PPE to perform the task. If any body parts or objects (conductive or non-conductive) enter the restricted workspace surrounding live parts, voltage rated gloves are required.

The Energized Work Permit requires the signatures of the electrically qualified person, Safety Team Member, Corporate Health, Safety and Environment Manager (CHSEM) and PM, along with detailed plans for this work.

# 4.2 Working on Energized Equipment 50 to 240 Volts

### 4.2.1 Purpose and Scope

This section establishes minimum requirements for working on equipment energized from 120/240-Volt single-phase systems, 120/208-Volt three-phase systems, 120-Volt single-phase systems, 240-Volt three-phase systems, and 125-Volt DC systems. The electrical tasks are performed in lighting panels, relay enclosures, distribution panels, wireways, instrument power panels, process control system (PCS) cabinets, and similar equipment. This applies to all qualified GHD personnel and all subcontractors performing work on behalf of GHD.

The section covers both construction and maintenance electrical tasks. Construction tasks include modifications, additions, and removal of electrical parts. Maintenance tasks include troubleshooting and testing after the facilities have been in operation.

### 4.2.2 General

#### Worker Qualification

The QTL needs to ensure that only qualified workers are performing the work, as per Section 6 of the WESP. The employee shall be instructed about any unique features of the particular equipment, including the specific actions that he or she must take in executing the task. The supervisor must ensure that the employee understands the assigned task and all of its safety implications.

#### Danger from Hazards

Work on energized 50 to 240-Volt equipment is hazardous. Adequate precautions must be taken to prevent contact with energized parts. The best practice is to avoid working on or near energized circuits between 50 and 240 Volts. Personnel must be reminded frequently that 120/240-Volts A/C is potentially lethal and accounts for the majority of fatalities from electrical shock.



#### **Need for Planning**

The number of electrical incidents involving work around energized systems between 50 and 240 Volts indicates the need for well-understood procedures. No work shall be attempted until the safety planning is complete and there is assurance that the work can be done safely.

The QTL will verify that there are no means to avoid working on energized equipment. Prior to completion of the Energized Work Permit, the following alternatives must be considered:

- Shutdowns could be held during off-hours
- The facility could accept the inconvenience of a shutdown during normal working hours

The Energized Work Permit will detail why the work cannot be de-energized. The work plan will detail a step by step procedure for completing the energized work. The site-specific HASP must address actions to be taken in the event of any emergency.

#### **Personal Protective Equipment**

All personnel within the flash hazard boundary must use appropriate personal protective equipment (PPE) as described fully in Appendix D.

#### 4.2.3 Electrical Tasks

JSAs are required to be prepared and executed for all electrical tasks. The following are potential areas of concern, but this is not an exhaustive list:

#### **Cutting or Drilling**

Cutting or drilling on or in energized cabinets and panelboards is hazardous because it is difficult to be absolutely certain that no energized parts are being affected. Therefore, these tasks require planning, barricading, and authorization. If wireways designed expressly for holding wires have been protected with adequate temporary barriers to prevent inadvertent contact with energized parts, the wireways may then be cut and drilled.

#### **Pulling Wire and Cable**

Pulling wire and cable through square ducts and other wireways into energized 120/240-VoltA/C panelboards, relay cabinets, and other similar enclosures are considered safe tasks for qualified persons. Wire and cable shall not be pulled in conduit containing energized conductors. Nonmetallic fish tape with a nonmetallic leader is required for pulling wire and cable in conduit. Bare ends of insulated wire shall be taped.

#### **Terminal Boxes**

To eliminate shock hazards, work in terminal boxes containing energized conductors must be carefully planned. Special consideration should be given to the possibility of "common neutrals."

#### Energized Relay Cabinets and Panel-boards

Electrical tasks in energized relay cabinets, panel-boards, and similar equipment may require extensive use of temporary barriers made of rubber, plywood, micarta, or Lucite<sup>®</sup>. The task of



installing a barrier adjacent to energized parts may be classified as hazardous work, depending on the barrier's distance from energized parts. The installation of the barriers shall be included in the job safety planning. All energized parts within reach of the worker's body or tools and equipment should be isolated with barriers.

#### Energized Input / Output Cabinets

Work performed on energized components in Input/Output (I/O) cabinets presents some special hazards. The worker must be qualified for the task. Care shall be taken in the risk assessment to consider the following conditions:

- Voltage-to-ground does not exceed 120 Volt A/C
- Personal protective equipment (PPE) is determined based on the hazards
- Nonconductive/insulated tools are used

I/O cabinets that contain no exposed voltages greater than 120 Volt A/C *and that are so labeled* do not require a written plan or an energized work permit.

#### Note: Affected Personnel must be notified prior to starting work in the I/O cabinet.

#### **Battery Systems**

Prior to work on a battery system , solar power system (s) with two sources of energy (battery/panel with greater than 50 Volts AC/DC, a risk assessment must be performed to identify the chemical, electrical shock, and arc flash hazards and assess the risks associated with the type of tasks to be performed. In conjunction with the assessment, it is important to review the warning signs or labels regarding shock hazard due to battery voltage and the arc flash hazard due to prospective short circuit current and thermal hazards.

#### **General Maintenance Requirements**

Qualified persons who perform maintenance on electrical equipment and installations must be trained and familiar with the specific maintenance and test procedures required. Additionally, maintenance is required for protective devices in order to adequately withstand or interrupt available fault current. Inspection and testing of these devices in accordance with manufacturers' specifications or industry consensus standards is mandatory. The results of these maintenance activities must be documented and maintained. The equipment owner is responsible for electrical equipment maintenance and the documentation of such maintenance.

# 4.3 Working on Energized Equipment Greater than 240 Volts up to 750 Volts

Working on energized electrical equipment is dangerous and should be avoided if possible. Equipment construction varies widely among manufacturers, and within the models of the same manufacturer. Each task must be reviewed to determine the shock and flash hazard boundaries. The tasks covered in this section may involve exposure to shock, arc flash and arc blast via open doors or covers. Each task is considered hazardous until a visual inspection and an absence of



voltage test confirms that there are no energized parts in the compartment and the line-side terminals are covered to prevent contact.

#### 4.3.1 Purpose and Scope

This section outlines the minimum requirements for working on energized equipment or circuits of greater than 240 Volts and up to 750 Volts. This applies to all GHD personnel and all subcontractors performing work on behalf of GHD.

The section covers both construction and maintenance electrical tasks. Construction tasks include modifications, additions, and removal of electrical parts. Maintenance tasks include troubleshooting and testing after the facilities have been in operation.

#### 4.3.2 General

#### Worker Qualification

The QTL needs to ensure that only qualified workers are performing the work, as per Section 6 of the WESP. The employee shall be instructed about any unique features of the particular equipment, including the specific actions that he or she must take in executing the task. The supervisor must ensure that the employee understands the assigned task and all of its safety implications.

#### **Danger from Hazards**

Adequate precautions must be taken to prevent contact with energized parts. The best practice is to avoid working on or near energized circuits.

#### Tools

Conductive measuring tapes, ropes or similar devices shall not be used when working on or near exposed energized conductors or parts of equipment. Conductive fish tapes shall not be used in raceways entering enclosures containing exposed energized parts unless such parts are isolated by suitable barriers.

#### **Need for Planning**

No work shall be attempted until the safety planning is complete and there is assurance that the work can be done safely.

The QTL will verify that there are no means to avoid working on energized equipment. Prior to completion of the Energized Work Permit, the following alternatives must be considered:

- Shutdowns could be held during off-hours
- The facility could accept the inconvenience of a shutdown during normal working hours

The Energized Work Permit will detail why the work cannot be de-energized. The work plan will detail a step by step procedure for completing the energized work. The site-specific HASP must address actions to be taken in the event of any emergency.



#### **Personal Protective Equipment**

All personnel within the flash hazard boundary must use appropriate personal protective equipment (PPE) as described fully in Appendix D.

#### 4.3.3 Electrical Tasks

JSAs are required to be prepared and executed by qualified employees for all electrical tasks. The following are potential areas of concern, but this is not an exhaustive list:

#### **Cutting Energized Cabinets**

Cutting and drilling on cabinets and cubicles that are energized is hazardous because it is difficult to be absolutely certain that no live parts are affected. These tasks shall not be performed except on wireways that are protected with adequate barriers, temporary or permanent, to prevent inadvertent contact with live parts.

The task of cutting holes in metal cabinets and cubicles generates shavings and filings that have the potential, themselves, to initiate an arcing fault. Such shavings and filings shall be collected and disposed of appropriately.

#### **Pulling Wire and Cable**

Pulling wire and cable into electrical equipment that contain no exposed energized parts is considered a safe task for qualified persons. A qualified person shall inspect the electrical equipment to ensure that it has no exposed energized parts and document on the Energized Work Plan Form. The qualified person shall visually inspect adjacent cables to ensure they are free from cracks, chips, or nicks. Taping the ends of all cable pulls as well as using non-metallic fish tape is required when pulling conductors into electrical equipment that contain energized components.

#### MCC Starter Maintenance

All personnel within the flash hazard boundary shall wear arc-flash protection defined in Appendix D.

When workers are testing fuses, they must de-energize the circuit, test the fuses to verify the absence of voltage, and determine the condition of the fuses by performing a continuity check on the de-energized fuses once removed from the circuit.

#### **Overhauling Motor Starters**

Motor starter overhauls are best performed with the MCC buses de-energized. Tightness of bus connections can then be checked and deficiencies corrected. Starter component replacement may require the removal of the starter from the MCC. Removal or insertion while energized requires specific training and qualifications as well as an Energized Work Permit.

#### Working on Energized 3-Phase Lighting Panels

All work shall be processed using Attachment A-2 "Shock Risk Assessment" and Attachment A-3 "Arc Flash Risk Assessment" to determine the work class and degree of hazard. Work on these



circuits and equipment shall be done by the appropriately qualified worker who is trained and familiar with the equipment.

#### **General Maintenance Requirements**

Qualified persons who perform maintenance on electrical equipment and installations must be trained and familiar with the specific maintenance and test procedures required. Additionally, maintenance is required for protective devices in order to adequately withstand or interrupt available fault current. Inspection and testing of these devices in accordance with manufacturers' specifications or industry consensus standards is mandatory. The results of these maintenance activities must be documented and maintained. The equipment owner is responsible for electrical equipment maintenance and the documentation of such maintenance.

# 4.4 Working on Energized Equipment over 750 Volts

#### 4.4.1 Purpose and Scope

Work or completion of Arc Flash Hazards Analysis on equipment energized at over 750 Volts shall not be performed by GHD employees unless expressly authorized through an Energized Work Permit and stringent requirements with final approval from a GHD Senior Regional Safety Health Manager (SRSHM) or CHSEM.

# 4.5 Release of a Worker Who is in Contact with Energized Equipment

There are innumerable possibilities, and it is obviously impossible to try to explain a method for each case. The procedures listed below shall be included in applicable JSAs and shall be reviewed prior to work commencing to ensure that all affected personnel are familiar with their individual roles in the event of an emergency.

If a worker is locked on to an energized part, *never* simply rush to their aid. If their body is energized, you may find yourself unable to release if you contact skin to skin.

If you are the first responder or other rescue party person, then your first responsibility is to yourself. Attempting an unplanned rescue may mean that not only does your rescue mission fail but both you and the victim may be injured or electrocuted.

- If at all possible, turn off the source of electricity (i.e., disconnect switch, light switch, circuit breaker, etc.) If this is not an option for any reason, use non-conductive material such as plastic or dry wood to separate the source of electricity from the victim or vice versa.
- If the injuries appear serious or extensive, call emergency services using the emergency number for your country. Explain the circumstances clearly.
- Check the victim's vital signs such as depth of breathing and regularity of heart beat. If either one is affected by exposure to electricity or if the victim is unconscious, perform CPR until the victim regains heartbeat and breathing or qualified help arrives to take over.
- If the victim is otherwise ok, treat any areas of the victim's body that may have sustained burns.



- If the victim is responsive and does not appear seriously injured but looks pale or faint, s/he may be at risk of going into shock. Gently lay the victim down with head slightly lower than chest and feet elevated.
- Arrange for medical attention.

If there is any doubt about the victim's condition whatsoever, call for an ambulance. Elderly people in particular may suffer cardiac arrest (heart attack) or even a stroke as the result of the often violent electric shock. In many cases, the electric shock itself may not kill the victim, but can easily be a trigger for some other life-threatening condition.

# 4.6 Operation of Cranes, Excavators, Drill Rigs or Aerial Devices in Proximity to Electrical Hazards

The limited approach boundary for all energized overhead lines varies from state to state and province to province. The approach boundary is also dependent on the voltage transmission. The greater the voltage transmission, the greater the safe approach boundary will be. Check local requirements and consult with the Utility Owner before proceeding with work tasks near overhead electrical hazards.

Live underground electrical lines shall be given special consideration because of the inability to visually locate per GHD's Utility Clearance protocols. One Call or suitable utility locator shall be used prior to commencement of digging activities. When feasible, potholing, daylighting or air knifing shall be used for confirmation of location and depth. Windy situations may require increasing the distance or planning the lift for another time. Caution shall be taken to ensure that the counter weight does not enter the limited approach boundary.

Where the above requirements are not feasible, the first choice is that the line be de-energized. Where it is not possible to de-energize the line, the work may be performed as required for the limited work class as shown in Attachment A-2 "Shock Risk Assessment". This would require contacting the local electrical service provider to implement additional safeguards such as insulating blankets. A live-work plan and a standby person who can be used as a spotter at a safe location and distance are mandatory in this scenario. The live-work plan would address who is in charge as well as other safeguards that may be required such as delineating the boundary, allowing for an over swing and assigning radios to the spotter and the crane operator.



# **Attachments**

GHD | NA-US-SOP-HSE-030 Workplace Electrical Safety Program | Rev. 1 – April 2017 | Appendix A – Electrical Procedures



Attachment A-1 Sample Electrical Work Plan and Electrical Safe Work Practice Checklist



# **Energized** Work Plan [Sample]

Date:	1	/	GHD Office:
Site Name:			
Project			Project
Number:			Manager:

Section 1: Scope
Section 2: Personnel Requirements



Section 3: Materials, Tools And Equipment Requirements

Section 4: Scheduling



#### **Section 5: Risk Assessment- Electrical**

# Maximum Working Voltage: Maximum Working Amps:

Shock Hazard		Arc Flash Hazard	
Determine Shock Approach Boundaries:		Maximum Incident Energy	
		Level:	cal/cm <sup>2</sup>
Limited Approach	inches	Arc Flash Protection	
Boundary:		Boundary:	inches
Restricted Approach	inches	Working Distance for Work	
Boundary:		Task:	inches
		Electrical Work Zone	
		barricading established at	inches
		what distance:	
Note: Unqualified Person to remain outside the		Note: Establish the Electrical Work Zone barrier	
Limited Approach Boundary		at the Arc Flash Protection Boundary or Limited	
		Approach Boundary, whichever is further away.	
Section 6: Hazard Analysis - Other			

# Signatures:

Originator

ΡM

QTPR

Date

Date

Date



Documentation
<ul> <li>Are your Arc Flash Risk Assessments documented and have the results been reviewed by your team?</li> </ul>
<ul> <li>Does the documentation include the results of the arc flash analysis, updated single-line diagrams, signs and labels on equipment and at hazardous areas?</li> </ul>
<ul> <li>Do the Warning Labels include the date, type, and name identification, incident energy a safe working distances, nominal system voltage, arc flash boundary, hazard/risk category minimum arc rating of clothing, site-specific level of PPE, and voltage limits of approach?</li> </ul>
Are all single-line diagrams up-to-date reflecting the current conditions?
Operations:
<ul> <li>Does your Work Plan include the identification of hazards, risk evaluation and risk reduction control procedures, electrical safe work isolation procedures, lockout, insulated tools, PPE and electrical safety principles?</li> </ul>
<ul> <li>Do you have appropriate safety procedures in place to minimize electrical dangers where exposure cannot be avoided during live work on energized systems?</li> </ul>
Labeling
Does all electrical equipment that may remain energized during maintenance or repair have     a warning label in compliance with local requirements?
• Did the worker review the arc flash and voltage warning label information on the equipmen and visually inspect the area to identify any potential hazards and risks?
Does the equipment being accessed have a voltage level warning label on exterior?
Does the main disconnect used for isolation have a "Lockout Here" label?
Personal Protective Equipment
Has the PPE been identified and available for the work activity?
Does the PPE conform to requirements as detailed in Appendix D?
Should the workers confirm the Category Incident Energy Calories/cm <sup>2</sup> ?
Should the workers inspect the PPE for damage and or contamination prior to use?
Should the workers use all buttons on the garment particularly to protect neck?
Should the workers confirm correct glove voltage class re Class 0 1000 Volt?
Should the workers have non-melting undergarments?
Should the workers remove all conductive objects from clothing and pockets?
Should the workers stand on Class 0 1000 volt-rated insulating mats?
Should the workers wear safety glasses?
Chauld the workers wear bearing protection?

- Should the workers wear hearing protection?
- Should the workers wear insulating footwear re Omega rated symbol on footwear Ω?

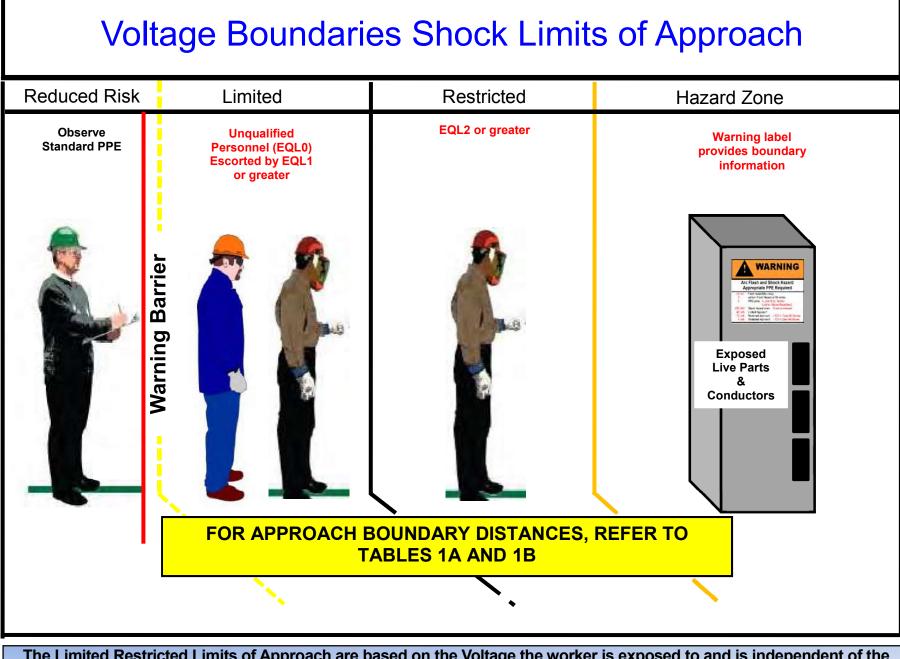


#### Implementation of Energized Work

- Should the worker review the arc flash label information on the equipment and visually inspect area to identify any potential hazards and risks?
- Should a design review be conducted to identify potential areas to reduce hazards including fault levels, exposure times, remote operations, remote racking, and system grounding?
- Should protective devices be tested and checked to verify performance per study?
- Should risk reduction strategies be implemented?
- Should the upstream isolation device be located by the worker?
- Should the worker use barricade methods to establish a boundary area?
- Ensure the surface that the worker is standing on is dry prior to working on live energized systems and use 1000 volt insulating mat.
- Ensure adequate/appropriate lighting is available.
- Select, inspect and use test instruments in compliance with Appendix B.
- Will workers review available drawings and documents?
- Will diagnostic checks be performed on load side of protective device only (not on the line side)?
- Consider, "Who is qualified to cross the barricade into the boundary area?"
- Are all conductive materials kept clear from exposed energized electrical systems?
- Are line and load guard covers in place?
- Are open front devices protected with non-conductive covers?
- Only qualified workers can cross into the Arc Flash or Shock Hazard Boundary?
- Has a qualified attendant remained at the boundary area to warn people away from the hazard?
- Are enclosure doors closed when unattended?
- At the completion of work, will the work area be left in a safe condition?



# Attachment A-2 Shock Hazard Analysis, Tables 1A and 1B from CSA Z462



The Limited Restricted Limits of Approach are based on the Voltage the worker is exposed to and is independent of the Arc Flash Incident Energy

Table 1 A of CSA Z462 and Table 130.4(D)(a) of NFPA 70e Approach boundaries to energized electrical conductors or circuit parts for shock protection for AC systems (distance from energized electrical conductors or circuit part to worker)\*

(See Clauses 4.1.6.4.1, 4.3.5.2, 4.3.5.3, 4.3.8.4.11, 4.3.8.5.2, 4.3.9.5, 4.3.9.6.1, 6.2.4.1, C.2, and C.2.1)

	(2)	(3)		
	Limited approach boundary		(4)	
(1) Nominal system voltage range, phase to phase†	Exposed movable conductor‡	Exposed fixed circuit part	Restricted approach boundary (includes inadvertent movement adder)	
Less than 50 V	Not specified	Not specified	Not specified	
50–150 V	3.05 m (10 ft 0 in)	1.07 m (3 ft 6 in)	Avoid contact	
151–750 V	3.05 m (10 ft 0 in)	1.07 m (3 ft 6 in)	304.8 mm (1 ft 0 in)	
751 V–15 kV	3.05 m (10 ft 0 in)	1.53 m (5 ft 0 in)	660.4 mm (2 ft 2 in)	
15.1–36 kV	3.05 m (10 ft 0 in)	1.83 m (6 ft 0 in)	787.4 mm (2 ft 7 in)	
36.1–46 kV	3.05 m (10 ft 0 in)	2.44 m (8 ft 0 in)	838.2 mm (2 ft 9 in)	
46.1–72.5 kV	3.05 m (10 ft 0 in)	2.44 m (8 ft 0 in)	1.0 m (3 ft 3 in)	
72.6–121 kV	3.25 m (10 ft 8 in)	2.44 m (8 ft 0 in)	1.29 m (3 ft 4 in)	
138–145 kV	3.36 m (11 ft 0 in)	3.05 m (10 ft 0 in)	1.15 m (3 ft 10 in)	
161–169 kV	3.56 m (11 ft 8 in)	3.56 m (11 ft 8 in)	1.29 m (4 ft 3 in)	
230–242 kV	3.97 m (13 ft 0 in)	3.97 m (13 ft 0 in)	1.71 m (5 ft 8 in)	
345–362 kV	4.68 m (15 ft 4 in)	4.68 m (15 ft 4 in)	2.77 m (9 ft 2 in)	
500–550 kV	5.8 m (19 ft 0 in)	5.8 m (19 ft 0 in)	3.61 m (11 ft 10 in)	
765–800 kV	7.24 m (23 ft 9 in)	7.24 m (23 ft 9 in)	4.84 m (15 ft 11 in)	

\*See the "Boundary" definitions in Clause 3. See also Clause 4.3.5.4.3 and Annex C.

*†For single phase systems, select the range that is equal to the system's maximum phase-to-ground voltage times 1.732.* 

‡A condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles. Note: For the arc flash boundary, see Clause 4.3.6.2.

Table 1 B of CSA Z462 and Table 130.4(D)(b) of NFPA 70e Approach boundaries to energized electrical conductors or circuit parts for shock protection for dc systems (distance from energized electrical conductors or circuit part to worker)\*34

	(2)	(3)	
	Limited approach boundary		(4)
(1) Nominal voltage conductor to ground	Exposed movable conductor <del>†</del>	Exposed fixed circuit part	Restricted approach boundary (includes inadvertent movement adder)
Less than 100 V	Not specified	Not specified	Not specified
100 V – 300 V	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	Avoid contact
301 V – 1 kV	3.0 m (10 ft 0 in)	1.0 m (3 ft 6 in)	300 mm (1 ft 0 in)
1.1 kV – 5 kV	3.0 m (10 ft 0 in)	1.5 m (5 ft 0 in)	450 mm (1 ft 5 in)
5.1 kV – 15 kV	3.0 m (10 ft 0 in)	1.5 m (5 ft 0 in)	660 mm (2 ft 2 in)
15.1 kV – 45 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	800 mm (2 ft 9 in)
45.1 kV – 75 kV	3.0 m (10 ft 0 in)	2.5 m (8 ft 0 in)	1.0 m (3 ft 6 in)
75.1 kV – 150 kV	3.4 m (10 ft 8 in)	3.0 m (10 ft 0 in)	1.2 m (4 ft 0 in)
150.1 kV – 250 kV	4.0 m (11 ft 8 in)	4.0 m (11 ft 8 in)	1.6 m (5 ft 3 in)
250.1 kV – 500 kV	6.0 m (20 ft 0 in)	6.0 m (20 ft 0 in)	3.5 m (11 ft 6 in)
500.1kV – 800 kV	8.0 m (26 ft 0 in)	8.0 m (26 ft 0 in)	5.0 m (16 ft 5 in)

\*See the "Boundary" definitions in Clause 3. See also Clause 4.3.5.4.3 and Annex C. †A condition in which the distance between the conductor and a person is not under the control of the person. The term is normally applied to overhead line conductors supported by poles. Note: For the arc flash boundary, see Clause 4.3.6.2.



Attachment A-3 Arc Flash Analysis, Tables 4A and 4B from CSA Z462

# Selection of Personal Protective Equipment for Various Tasks

### Alternating Current (AC) Equipment

When the arc flash PPE category method is selected in lieu of the incident energy analysis method CSA Z462 and NFPA 70E Table Method shall be used to identify when arc flash PPE is required.

When arc flash PPE is required, CSA Z462 and NFPA 70E Table Method shall be used to determine the hazards and risks for the selection of arc flash PPE category.

The <u>estimated</u> maximum available short-circuit current, maximum fault clearing times and minimum working distances for various AC equipment types or classifications are listed in the CSA Z462 and NFPA 70E Table Method.

The Tables have limitations and shall not be a substitute for an eventual Incident energy Analysis. The Tables may not be a viable solution for the optimum protection for workers. An incident energy analysis shall be required in accordance with CSA Z462 and NFPA 70E standards for the following:

- 1. Tasks not listed in the Tables;
- 2. Power systems with greater than the estimated maximum available short-circuit current;
- 3. Power systems with longer than the maximum fault clearing times;
- 4. Tasks with less than the minimum working distance.

#### Direct Current (DC) Equipment

When the arc flash PPE category method is selected in lieu of the incident energy analysis method CSA Z462 and NFPA 70E Table Method shall be used to identify when arc flash PPE is required.

When arc flash PPE is required, Table 4C shall be used to determine the arc flash PPE category.

For Canada the estimated maximum available short circuit current, maximum arc duration and working distances for DC equipment are listed in Table 4C. The NFPA 70 E requirements are the same as CSA Z462 as these documents are ostensibly harmonized.

An incident energy analysis shall be required in accordance with CSA Z462 Clause 4.3.5.3.2 for the following:

- 1. Tasks not listed in Table 4A;
- 2. Power systems with greater than the estimated maximum available short circuit current;
- 3. Power systems with longer than the maximum arc duration; or
- 4. Tasks with less than the minimum working distance.

Notes:

(1) The arc flash PPE category, work tasks, and protective equipment provided in Tables 4A, were identified and selected based on the collective experience of the NFPA 70E technical committee. The arc flash PPE category of the protective clothing and equipment is generally based on a determination of the estimated exposure levels level.

(2) Collective experience NFPA 70E technical committee indicates that in most cases closed doors do not provide enough protection to eliminate the need for PPE in situations in which the state of the equipment is known to change frequently, e.g., doors open or closed, rack in or rack out.

(3) The premise used by the NFPA 70E technical committee in developing the criteria discussed in Notes (1) and (2) is considered to be reasonable, based on the consensus judgment of the Committee.

# Table 4AArc-flash hazard identification for alternating current (ac) and direct current (dc) systems(See Clauses 3, 4.3.1, 4.3.7.3.7, 4.3.7.3.15, 4.3.7.3.16, 4.3.7.4.2, and B.2, Table 5 and Annex H)

<b>T</b> !		Arc Flash PPE
<u>Task</u>	Equipment Condition *	<u>Required</u>
Reading a panel meter while operating a meter switch	Any	No
Normal operation of a circuit breaker (CB)k	<ul> <li>All of the following:</li> <li>The equipment is properly installed;</li> <li>The equipment is properly maintained;</li> <li>All equipment doors are closed and secured;</li> <li>All equipment covers are in place and secured; and</li> <li>There is no evidence of impending failure.</li> </ul>	No
switch, contactor or starter	<ul> <li>One or more of the following:</li> <li>The equipment is not properly installed;</li> <li>The equipment is not properly maintained;</li> <li>Equipment doors are open or not secured</li> <li>Equipment covers are off or not secured; or</li> <li>There is evidence of impending failure.</li> </ul>	Yes
For ac systems: Work on energized electrical conductors and circuit parts, including voltage testing	Any	Yes
For dc systems: Work on energized electrical conductors and circuit parts of series-connected cells, including voltage testing	Any	Yes
Voltage testing on individual battery cells or	<ul> <li>All of the following:</li> <li>The equipment is properly installed;</li> <li>The equipment is properly maintained;</li> <li>Covers for all equipment are in place and secured; and</li> <li>There is no evidence of impending failure.</li> </ul>	No
individual multi-cell units	<ul> <li>One or more of the following:</li> <li>The equipment is not properly installed;</li> <li>The equipment is not properly maintained;</li> <li>Equipment doors are open or not secured</li> <li>Equipment covers are off or not secured; or</li> <li>There is evidence of impending failure.</li> </ul>	Yes
Removal or installation of CBs or switches	Any	Yes
Removal of installation of covers for equipment such as wireways, junction boxes and cable trays	<ul> <li>All of the following:</li> <li>The equipment is properly installed;</li> <li>The equipment is properly maintained; and</li> <li>There is no evidence of impending failure.</li> </ul>	No
that does not expose bare, energized electrical conductors and circuit parts	<ul> <li>One or more of the following:</li> <li>The equipment is not properly installed;</li> <li>The equipment is not properly maintained; or</li> <li>There is evidence of impending failure.</li> </ul>	Yes
Removal of bolted covers (to expose bare energized electrical conductors and circuit parts); For dc systems, this includes bolted covers, such as battery terminal covers	Any	Yes

Task	Equipment Condition *	<u>Arc Flash</u> <u>PPE</u> Required
Removal of battery intercell connector covers	<ul> <li>All of the following:</li> <li>The equipment is properly installed;</li> <li>The equipment is properly maintained;</li> <li>Covers for all equipment are in place and secured; and</li> <li>There is no evidence of impending failure.</li> </ul>	No
	<ul> <li>One or more of the following:</li> <li>The equipment is not properly installed;</li> <li>The equipment is not properly maintained;</li> <li>Equipment doors are open or not secured</li> <li>Equipment covers are off or not secured; or</li> <li>There is evidence of impending failure.</li> </ul>	Yes
Opening hinged door(s) or cover(s) (to expose bare energized electrical conductors and circuit parts)	Αηγ	Yes
Perform infrared thermography and other non- contact inspections outside the restricted approach boundary. This activity does not include opening of doors or covers.	Any	No
Application of temporary protective grounding equipment, after voltage test	Any	Yes
Work on control circuits with exposed energized electrical conductors and circuit parts, 120 volts or below without any other exposed energized equipment over 120 volts including opening of hinged covers to gain access	Any	No
Work on control circuits with exposed energized electrical conductors and circuit parts, greater than 120 volts	Any	Yes
Insertion or removal of individual starter buckets from MCC	Any	Yes
Insertion or removal (racking) of CBs of starters from cubicles, doors open or closed	Any	Yes
Insertion or removal of plug-in devices into or from busways	Any	Yes
Insulated cable examination with no manipulation of cable	Any	No
Insulated cable examination with manipulation of cables	Any	Yes
Work on exposed energized electrical conductors and circuit parts of equipment directly supplied by a panelboard or motor control center	Any	Yes
Insertion or removal of revenue meters (kW- hour, at primary voltage and current)	Any	Yes

	Arc-Flash PPE	Arc-Flash
<u>Equipment</u>	Category	Boundary
Panelboards or other equipment rated 240 V and below		
Parameters:	1	485 mm
Maximum of 25 kA short-circuit current available; maximum of 0.03 sec	1	(19 in.)
(2 cycles) fault clearing time; working distance 18 inches		
Panelboards or other equipment rated > 240 V and up to 600 V		
Parameters:	2	900 mm
Maximum of 25 kA short-circuit current available; maximum of 0.03 sec	2	(3 ft)
(2 cycles) fault clearing time; working distance 18 inches		
600-V class motor control centers (MCCs)		
Parameters:	2	1.5 m
Maximum of 6 kA short-circuit current available; maximum of 0.03 sec	2	(5 ft)
(2 cycles) fault clearing time; working distance 18 inches		
600-V class motor control centers (MCCs)		
Parameters:	4	4.3 m
Maximum of 42 kA short-circuit current available; maximum of 0.33 sec	4	(14 ft)
(20 cycles) fault clearing time; working distance 18 inches		
600-V class switchgear (with power circuit breakers or fused switches) and 600 V class		
switchboards		C.m.
Parameters:	4	6 m
Maximum of 35 kA short-circuit current available; maximum of 0.5 sec		(20 ft)
(30 cycles) fault clearing time; working distance 18 inches		
Other 600-V class (277 V through 600 V nominal) equipment		
Parameters:	2	1.5 m
Maximum of 65 kA short-circuit current available; maximum of 0.03 sec	2	(5 ft)
(2 cycles) fault clearing time; working distance 18 inches		
NEMA E2 (fused contactor) motor starters, 2.3 kV through 7.2 kV		
Parameters:	4	12 m
Maximum of 35 kA short-circuit current available; maximum of 0.24 sec	4	(40 ft)
(15 cycles) fault clearing time; working distance 36 inches		
Metal-clad switchgear, 1 kV through 15 kV		
Parameters:	4	12 m
Maximum of 35 kA short-circuit current available; maximum of 0.24 sec	4	(40 ft)
(15 cycles) fault clearing time; working distance 36 inches		
Arc-resistant switchgear Type 1 or 2 (for clearing times of <0.5 sec (30 cycles) with a		
perspective fault current not to exceed the arc-resistant rating of the	N/A (doors	N/A (dooi
equipment), and metal-enclosed interrupter switchgear, fused or unfused of	closed)	closed)
arc-resistant-type construction, tested in accordance with IEEE C37.20.7, 1 kV		
through 15 kV)		
Parameters:	4 (doors open)	12 m
Maximum of 35 kA short-circuit current available; maximum of 0.24 sec		(40 ft)
(15 cycles) fault clearing time; working distance 36 inches		
Other equipment 1 kV through 15 kV		
Parameters: 4		12 m
Maximum of 35 kA short-circuit current available; maximum of 0.24 sec	4	(40 ft)
(15 cycles) fault clearing time: working distance 36 inches		

 Table 4B

 Arc-Flash PPE categories for alternating current (ac) systems

Note: For equipment rated 600 volt and below and protected by upstream current limiting fuses or current limiting circuit breakers sized at 200 amperes or less, the arc flash PPE category can be reduced by one number, but not below arc flash PPE category 1.

(15 cycles) fault clearing time; working distance 36 inches

#### Table 4C

Arc-Flash PPE categories for direct current (dc) systems (See Clauses 3, 4.3.1, 4.3.2.2.2, 4.3.7.3.7, 4.3.7.3.15, 4.3.7.3.16, 4.3.7.4.2, and B.2, Table 5 and Annex H)

	Arc-Flash PPE	Arc-Flash
<u>Equipment</u>	Category	<u>Boundary</u>
Storage batteries, direct-current switchboards and other dc supply sources		
100 V > Voltage < 250 V		
Parameters:		
Voltage: 250 V		
Maximum arc duration and working distance: 2 s at 455 mm (18 in)		
Short-circuit current < 4 kA	1	900 mm (3 ft)
4 kA ≤ short-circuit current < 7 kA	2	1.2 m (4 ft)
7 kA ≤ short-circuit current < 15 kA	3	1.8 m (6 ft)
Storage batteries, direct-current switchboards and other dc supply sources		
$250 \text{ V} \leq \text{Voltage} \leq 600 \text{ V}$		
Parameters:		
Voltage: 600 V		
Maximum arc duration and working distance: 2 s at 455 mm (18 in)		
Short-circuit current < 1.5 kA	1	900 mm (3 ft)
1.5 kA ≤ short-circuit current < 3 kA	2	1.2 m (4 ft)
3 kA ≤ short-circuit current < 7 kA	3	1.8 m (6 ft)
7 kA ≤ short-circuit current < 10 kA	4	2.5 m (8 ft)

#### Table 5

#### Personal Protective Equipment (See Clauses 4.3.1, 4.3.7.3.12, and 4.3.7.3.16, and Tables 4A and 4B, and Annex H)

Arc Flash PPE	
Category	Personal Protective Equipment (PPE)
1	Arc rated clothing, minimum arc rating of 4 cal/cm <sup>2</sup> (Note 3)
	Arc rated long-sleeve shirt and pants or arc rated coverall
	Arc rated faceshield or arc flash suit hood (Note 2)
	Arc rated jacket, parka, rainwear, or hard hat liner (AN)
	Protective equipment:
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Heavy duty leather gloves (AN) (Note 1)
	Leather footwear (AN)
2	Arc rated clothing, minimum arc rating of 8 cal/cm <sup>2</sup> (Note 3)
	Arc rated long-sleeve shirt and pants or arc rated coverall
	Arc rated arc flash suit hood; or Arc rated faceshield (Note 2) and arc rated balaclava
	Arc rated jacket, parka, rainwear, or hard hat liner (AN)
	Protective equipment:
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Heavy duty leather gloves (AN) (Note 1)
	Leather footwear (AN)
3	Arc rated clothing, selected so that the system arc rating meets the required minimum arc rating of 25 cal/cm <sup>2</sup> (Note 3)
	Arc rated long-sleeve shirt (AR)
	Arc rated pants (AR)
	Arc rated coverall (AR)
	Arc rated arc flash suit jacket (AR)
	Arc rated arc flash suit pants (AR
	Arc rated arc flash suit hood
	Arc rated gloves (Note 1)
	Arc rated jacket, parka, rainwear, or hard hat liner (AN)
	Protective equipment:
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Leather footwear (AN)
4	Arc rated clothing, selected so that the system arc rating meets the required minimum arc rating of 40 cal/cm <sup>2</sup> (Note 3)
	Arc rated long-sleeve shirt (AR)
	Arc rated pants (AR)
	Arc rated coverall (AR)
	Arc rated arc flash suit jacket (AR)
	Arc rated arc flash suit pants (AR
	Arc rated arc flash suit hood
	Arc rated gloves (Note 1)
	Arc rated jacket, parka, rainwear, or hard hat liner (AN)
	Protective equipment:
	Hard hat
	Safety glasses or safety goggles (SR)
	Hearing protection (ear canal inserts)
	Leather footwear (AN)
Legend:	

Legend:

AN = as needed (optional); AR = as required; SR = selection required

Notes

(1) Arc rating is defined in Clause 3

(2) Faceshields shall meet the requirements of Clause 4.3.7.3.10(c). An arc flash suit hood may be worn in lieu of a face shield.

(3) If rubber insulating gloves with leather protectors are used, additional leather or arc-rated gloves shall not be required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.

[FR-69; PI-263 and SR-66 revises all of Clause 4.3.7.3.16, including Table 5]



## Attachment A-4 Energized Work Permit and Flow Chart



## **Energized** Electrical Permit

Date: Site Name:		/	1		GHD Office:	
Project Numb	er:				Project Manager:	
Section 1:	Го Be Con	plete	d By the	e Requ	lestor	
Project desc	ription:					
Description of	of energized	d work	to be d	one:		
Proposed da	tes and du	ration	of energ	gized w	vork:	
Anticipated r	number of v	vorker	s and th	eir qua	lifications (including subcontractors):	
					nnot be de-energized or the work deferred until the nex usal of shut down request):	
	Requestor	/Title			Date	_
Section 2:	Го Be Com	plete	d By the	e Elect	rically Qualified Person <i>Doing</i> the Work	
(1) Work Pla	n attached	?				
(2) Does the	work plan	addres	ss Safe	Work P	Practices as required by NFPA 70E or CSA Z462?	
(3) Shock Ha	azard Analy	vsis att	ached?			
(4) Arc Flash	ı Hazard Aı	nalysis	attache	ed?		



## **Energized** Electrical Permit

(5) Do you agree the above described work can be done safely?  $\Box$  Yes  $\Box$  No If *no*, return to requestor

Qualified Technical Lead

Date

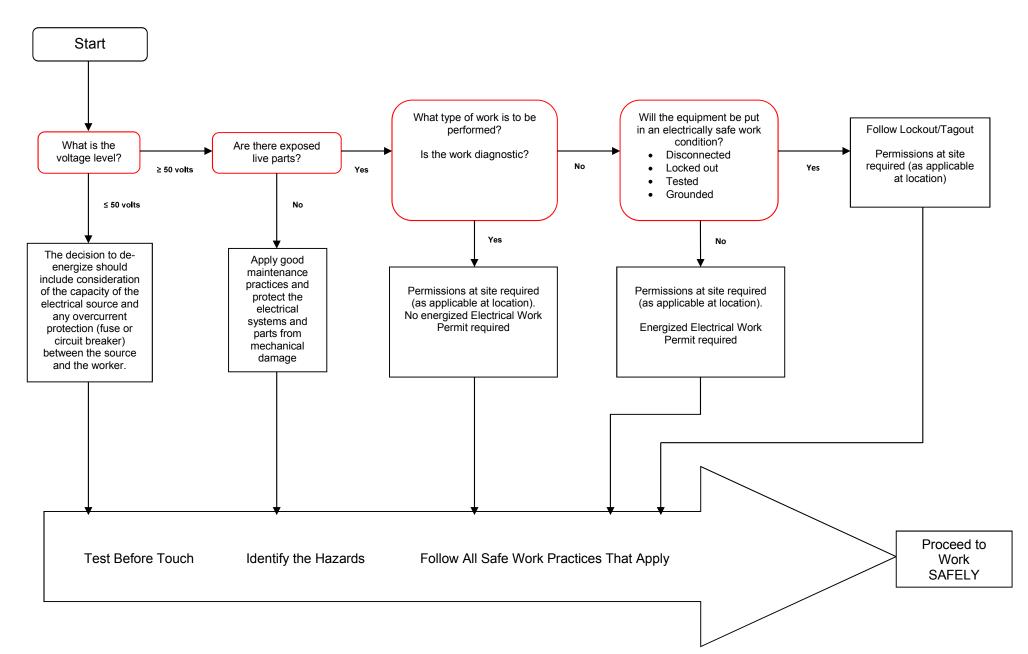
#### Section 3: Approval(s) To Perform the Work While Electrically Energized

Project Manager	Date
Qualified Senior Electrical Reviewer	Date
SRSHM or Corporate HSE Manager	Date
Principal in charge of project	Date
Principal in charge of HSE	Date

Note: Once the energized work is complete, forward this form to the project file and RSHM for retention



## **Energized** Electrical Work Permit Flow Chart





## Appendix B Electrical Tools and Equipment



## **Table of Contents**

1.	Purpo	ose and Scope1		
2.	Gene	neral		
3.	Train	ing		
4.	Inspe	ction and T	Festing	. 2
	4.1	Periodic I	nspection and Testing	. 2
	4.2	Prior to U	se	. 2
		4.2.1 4.2.2	Visual Inspection Testing	. 2 . 2
5.	Stora	ge		. 2
6.	Test I	Equipment		. 3
	6.1	Voltage T	esters	. 3
		6.1.1 6.1.2	Contact Voltage Testers Non-Contact Voltage Testers	. 3 . 3
7.	Special Tools			
	7.1	Fuse Pullers		
	7.2	Hot Sticks	5	. 4
	7.3	Insulated	Hand Tools	. 5
8.	Barrie	ers		. 5



### 1. Purpose and Scope

This section defines the criteria for the selection and care of electrical test equipment and other special tools.

## 2. General

The safety of personnel working on or near energized electrical equipment is greatly dependent on the design, selection, knowledge in use of, care and maintenance of tools and test equipment used. Tool Selection will be limited to qualifications and training of the person using the tools.

Test equipment must meet the minimum standard contained in this section.

The following general directions shall apply to electrical test equipment, special tools, and their accessories:

- Test instruments, equipment, and their accessories shall meet the requirements of ANSI/ISA-61010-1-Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use –Part 1 General Requirements, for rating and design requirements for voltage measurement and test instruments intended for use on electrical systems 1000 Volts and below.
- They shall be rated for the circuits and equipment to which they will be connected.
- They must be used within the parameters of the manufacturer recommendations and used only in accordance with the intended use.
- The test equipment described is generally not suitable for use in areas classified as hazardous locations, such as Class I, Zone (Division) 0, 1 & 2 areas. For Class I, Zone (Division) 0, 1 & 2 areas, hot work permits, restricted and confined space protocols and other special site requirements must be considered prior to selecting the tools and equipment.

## 3. Training

Training will be provided based on the qualification level of the employee. Only qualified personnel who have been trained in accordance with the EQL requirements of the WESP may use electrical test equipment and special tools with their permissions. Training shall include but is not limited to the following:

- Proper application and use of the equipment or tool
- Limitations of the equipment or tool
- Inspection of the equipment or tool
- Determination of the equipment or tool certification
- Understanding of instrument display and information provided



• Proper care of tools and test equipment

## 4. Inspection and Testing

#### 4.1 **Periodic Inspection and Testing**

Testing Certifications and Maintenance records shall be maintained in accordance with GHD's ISO program and manufacturers' recommendations, if applicable.

Test equipment and special tools shall be visually inspected for damage and defects before initial use. Thereafter, such inspections shall be conducted as often as service conditions require, but at least every 12 months, unless otherwise specified by the applicable CSA, ULC, or ASTM Standard.

The insulation of test equipment and special tools shall be verified by an appropriate test and visual inspection before initial use to ascertain that insulating capability has been retained. Thereafter, such tests and inspections shall be conducted as often as service conditions and applicable standards and instructions require, but at least every 36 months, unless otherwise specified by the applicable CSA, ULC, or ASTM Standard.

#### 4.2 Prior to Use

Electrical test equipment and special tools shall be inspected prior to use. In addition inspection and testing will be done following any incident and at regular intervals recommended by the manufacturer.

#### 4.2.1 Visual Inspection

Electrical test instruments, special tools, and all associated test leads, cables, power cords, probes, and connectors shall be visually inspected for external defects or damage by the user before each use. If visible defects or evidence of damage that might expose an employee to injury are evident, the defective or damaged item shall not be used until any required repairs and tests have been made.

#### 4.2.2 Testing

Independent of the quality system calibration and testing of equipment or tools, the employee will verify the functionality and safe performance of the equipment and tools prior to use. When test instruments are used for the testing for the absence of voltage on conductors or circuit parts operating at 50 volts or more, the operation of the test instrument shall be verified before and after an absence of voltage test is performed.

### 5. Storage

When not in use, electrical test equipment and special tools must be stored in a manner that will prevent damage or deterioration. Protective cases shall be purchased with the equipment for storage purposes. Equipment shall be stored in the protective case when not in use.



## 6. Test Equipment

Test equipment should be selected based on standards, practices and equipment limitations and suitability for use intended.

This section addresses test equipment that is anticipated to be used by GHD employees in accordance with their EQL.

#### 6.1 Voltage Testers

Voltage testers shall be selected based upon the intended use. Several types of voltage testers exist with specific uses and limitations. When testing for the absence or presence of voltage as a part of establishing an electrically safe work condition, voltage testers shall meet the stated requirements, as detailed below.

All voltage-detecting devices shall be rated for the voltage and be suitable for the environment in which they will be used. Proper operation of the voltage tester must be verified on a known source, both before and after the tests.

#### 6.1.1 Contact Voltage Testers

#### Measuring Voltage and Troubleshooting

The following features are required for volt-meters used in measuring voltage and troubleshooting:

- Insulated tip test probes
- Slip protection/finger guards on test probes
- Self-contained fault protection or limitation devices, such as internal current-limiting fuses or probe current-limiting resistors
- Category III (minimum) rating for 1.2 times the anticipated nominal voltage tested shall be used by GHD personnel
- Double insulated meters shall be used by GHD personnel
- Fused Leads appropriate to the meter selected

#### 6.1.2 Non-Contact Voltage Testers

#### Preference

A non-contact voltage tester may be the preferred device for initial testing prior to contact voltage testing when performing such tasks as testing insulated conductors prior to cutting, breaking motor leads, or testing lighting circuits. Note: these testers' limitations must be understood and <u>CANNOT</u> <u>BE USED AS A FINAL VOLTAGE CONFIRMATION. An operational check must be completed</u> <u>on a known energized system.</u>



#### Limitations

Non-contact testers should be selected and used based upon the conditions in which they are to be used in relation to the limitations of the devices. When selecting these testers, the manufacturer's information should be reviewed concerning the limitations of the device to be used. The following limitations are examples of what could be found in non-contact testers:

- Category III (minimum) rating for 1.2 times the anticipated nominal voltage tested shall be used by GHD personnel
- An inability to sense DC voltage
- A minimum voltage under which they are unable to sense the orientation of the device in relation to or distance from what is being tested that may impact the reading
- Phase cancellation in three-phase, multi-conductor cables that may impact the reading
- Inability to read through metal, such as conduit and metal boxes
- Small metal enclosures that may impact the reading
- An inability to read underground cables less than 6" away from the earth or dirt
- A reading that is impacted by hand position
- Sensitivity to temperature
- An inability to sense induced voltage
- An inability to read some frequencies, especially low frequencies

## 7. Special Tools

Special tools should be stocked in the GHD Field Equipment room and inspection logs should be copied in the tool room. The list below is not all inclusive. The most common tools are referenced below; however, additional special tools may be required. All tools must be inspected in accordance with the manufacturers' recommendations and should only be used for their intended purpose.

#### 7.1 Fuse Pullers

Only devices designed for the purpose of pulling fuses shall be used to remove and install fuses. The fuse-pullers shall be of the appropriate size and style.

#### 7.2 Hot Sticks

Work on equipment energized at over 1,000 Volts shall not be performed by GHD employees unless expressly authorized through an Energized Work Permit and stringent requirements with final approval from a GHD SRSHM or a GHD Corporate HSE Manager.

Work requiring use of hot sticks will only be performed by a specialized electrical contractor.



#### 7.3 Insulated Hand Tools

Insulated tools such as screw drivers, pliers, etc., provide some level of protection from initiating an arc flash. They shall not be singularly relied upon for shock protection or used when the hazard/risk analysis indicates the need, as deemed necessary by the Energized Work Permit.

### 8. Barriers

There are two objectives for barriers: insulation and physical separation. Installation of barriers requires detailed planning, as barrier placement may be more hazardous than careful execution of certain tasks. Shock protection barriers do not afford protection from arc and flash hazards.

#### Insulation

Insulating barriers can be made of voltage-rated rubber products, voltage-rated tape, or certain plastics or composites. The material used depends upon the task. Special planning may be required to ensure that the proper level of protection is obtained.

Insulating barriers may be placed directly on energized conductors and parts to prevent inadvertent contact with body parts and tools. The barriers must be rated according to ASTM standards for, or above, the circuit voltage involved. An insulating barrier is normally not adequate to restrain significant physical force or to stop a puncture or cut.

#### **Physical Separation**

Physical barriers shall never be placed directly on an energized part or within the prohibited boundary. They are installed to provide a physical restraint to prevent body parts or tools from getting near energized parts.

Physical barriers may be made of plywood, micarta, or Lucite. Care must be taken to select the appropriate barrier material, as certain rubber and plastic-type materials might be conductive. Cardboard must never be used for any type of insulating or physical barrier. The voltage rating of the barrier material must be determined.

EQL3 or greater is required to apply insulating barriers.



## Appendix C Electrical Contractors



## **Table of Contents**

1.	Purpose and Scope	1
2.	Electrical Safety Program	1
3.	Qualifications of Employees	1



### 1. Purpose and Scope

This section covers qualification requirements necessary for a contractor to perform work on a site where GHD is responsible for the health and safety of the personnel involved. This section applies to both prime contractors and subcontractors.

## 2. Electrical Safety Program

To be considered qualified to perform work on a project site, prime contractors and subcontractors (if appropriate) shall have an established Workplace Electrical Safety Program (WESP). Contractor employees are expected to follow their safety-related work practices when performing work on GHD project sites.

Prime contractors and subcontractors shall abide by requirements established under NFPA 70E or CSA Z462 for electrical work. GHD reserves the right to request each contractor's electrical safety program, including both procedures and work practices, to ensure compliance with minimum Standards for select GHD projects or client requirements.

Potential contractors or sub-contractors shall provide copies of their WESP as part of the Subcontractor Approval process. The contractor shall ensure that all employees, including subcontractors, implement and follow the requirements of applicable procedures.

## 3. Qualifications of Employees

Contractors shall provide GHD with necessary certification to verify that all employees who might be exposed to an electrical hazard are qualified to work in that environment.



## Appendix D Electrical Personal Protected Equipment



## **Table of Contents**

1.	Purpose and Scope1		
2.	General		
3.	Traini	ng	1
	3.1	Type of Training	1
	3.2	Worker Training	1
	3.3	Training Documentation	2
4.	Inspe	ction and Testing	2
	4.1	Periodic Inspection and Testing	2
	4.2	Testing	3
	4.3	Glove and Sleeve Testing	3
5. Storage		ge	3
	5.1	Storage and Care of Arc Flash PPE	3
6.	Shock Protection		
7.	Arc Flash Protection		



### 1. Purpose and Scope

Appropriate electrical protective equipment includes personal protective equipment (PPE) that is appropriate for the electrical and associated hazards present while working on or near energized electrical equipment. This includes flame-resistant clothing, head protection, safety glasses, dielectric footwear, gloves and face shields. This applies to all GHD personnel and all subcontractors performing work on behalf of GHD.

### 2. General

#### Intended Use

All PPE has an intended use. Using PPE outside of the intended use will not afford the necessary protection to personnel. PPE specifically selected for electrical hazards shall only be used for those specific tasks.

PPE must be selected based on the hazard. PPE designed to provide protection from electrical shock may not be adequate for protecting people from flash hazards. Likewise, PPE designed for flash protection will not provide protection from electrical shock.

## 3. Training

The training requirements specified shall apply to workers who face a risk of electrical hazard. Such workers shall be trained to understand the specific hazards associated with electrical energy, as follows:

- a) They shall be trained in the safety-related work practices and procedural requirements necessary to provide protection from the electrical hazards associated with their job or task assignments
- b) They shall be trained to identify and understand the relationship between electrical hazards and possible injury

#### 3.1 Type of Training

The training required shall be classroom or on-the-job training, or both. The degree of training provided shall be determined in accordance with the EQL of the worker.

#### **3.2 Worker Training**

#### **Qualified Persons**

Qualified persons shall be trained in and knowledgeable about the construction and operation of equipment or a specific work method and trained to recognize and avoid the electrical hazards that might be present with respect to that equipment or work method. The following requirements shall also apply:



- Such persons shall be familiar with the proper use of the applicable special precautionary techniques and personal protective equipment (PPE), including arc flash, insulating and shielding materials, and insulated tools and test equipment.
   Note: A person can be qualified for certain tasks and in the use of certain equipment and methods and yet be unqualified for other tasks and in the use of other equipment and methods.
- 2. Such persons permitted to work within the limited approach boundary of exposed energized electrical conductors and circuit parts operating at 50 V or more shall, at a minimum, be additionally trained in the decision-making process to determine the degree and extent of the hazard and the PPE and job planning necessary to perform the task safely.

#### **3.3 Training Documentation**

The employer shall document that each worker has received the training required. This documentation shall be created when the worker demonstrates proficiency in the use of PPE, maintained for the duration of the worker's employment, and shall include the content of the training, the worker's name, and the dates of training.

Note: Employment records that indicate that a worker has received the required training are an acceptable means of meeting the requirements of this Clause.

### 4. Inspection and Testing

#### 4.1 **Periodic Inspection and Testing**

Testing Certifications and Maintenance records shall be maintained in accordance with GHD's ISO program and manufacturers' recommendations, if applicable.

PPE shall be visually inspected for damage and defects before each day's use and immediately following any incident that can reasonably be suspected of having caused damage. Insulating gloves shall be given an air test, along with the inspection (see Section 4.3). Thereafter, such inspections shall be conducted as often as service conditions require, but at least every 12 months, unless otherwise specified by the applicable CSA, UL, ULC, NFPA or ASTM Standard. PPE that has become contaminated with grease, flammable liquids, etc. shall be removed and sent to be laundered.

PPE shall be verified by an appropriate test and/or visual inspection before initial use to ascertain that insulating capability has been retained. Thereafter, such tests and inspections shall be conducted as often as service conditions and applicable standards and instructions require, but at least every 36 months, unless otherwise specified by the applicable CSA, UL, ULC, NFPA or ASTM Standard.

#### 4.2 Testing

Electrical Protective Equipment must undergo periodic electrical tests to ensure its protective qualities are still present. ASTM provides detailed information about the required testing.



#### 4.3 Glove and Sleeve Testing

ASTM F 496 is the specification for In-Service Care of Insulating Gloves and Sleeves. In general, the procedures below shall be followed:

- The glove is filled with air (manually or by an inflator) and checked for any leakage or holes. It is detected by either listening for escaping air or feeling the escaping air by holding the glove against the tester's cheek.
- Sleeves are inspected as they are rolled since they cannot be filled with air. Rolling stretches
  the sleeve along an edge, making cuts, tears, ozone cutting and various other damages more
  visible. After inspecting the outside of the sleeve, the procedure should be repeated with the
  sleeve turned inside out.

During testing, gloves and sleeves should not be expanded more than 1.5 times their regular size for Type I, and 1.25 times their regular size for Type II. These steps should then be repeated with the glove turned inside out.

In addition to this visual testing, electrical protective equipment shall also be subjected to periodic electrical tests. Gloves and sleeves being used in the field shall be electrically tested or replaced every six months. If the insulating equipment has been electrically tested but not issued for service, it shall not be put into service unless it has been tested within the previous 12 months.

Insulating equipment shall be marked with the latest test date or the next test due on. Gloves, sleeves and blankets shall be marked to indicate compliance with the re-test schedule and shall be marked with either the date tested or the date the next test is due.

Defective insulating equipment is removed from service immediately. Insulating equipment and any other electrical equipment or material found to be defective or damaged shall be immediately removed from service.

## 5. Storage

When not in use, electrical PPE must be stored in a manner that will prevent damage or deterioration. Protective cases shall be purchased with PPE where appropriate. PPE shall be stored in the protective case when not in use.

#### 5.1 Storage and Care of Arc Flash PPE

Arc flash rated clothing or any other clothing shall be kept clean. Grease, oil, or other contaminate accumulation on the clothing might ignite in an arc flash. Arc flash rated clothing must be washed separately from other fabrics and in accordance with manufactures guidelines. Arc flash rated clothing must be discarded after manufactures stated number of washes has been exceeded.

Arc flash rated PPE must be inspected before each use for holes, tears, cuts, contamination, or deterioration. All snaps, zippers, or fasteners must be in good working condition. Face shields must not be cracked, scratched or broken, Face shields and hood bands or supports must be in good working condition. Any PPE found to be damaged shall not be used. Defective PPE must be tagged defective until repaired or destroyed.



### 6. Shock Protection

When working around electrical circuits over 50 Volts, electric shock is a known and preventable hazard. Employees shall wear rubber insulating gloves as determined by the shock hazard analysis. This hazard analysis may determine that other devices such as rubber blankets and covers may be needed to adequately protect employees in addition to gloves.

## 7. Arc Flash Protection

Correctly selected and rated PPE shall be worn as determined by the arc flash risk assessment. Determining the appropriate level of PPE is important. Too little PPE can expose a worker to potentially lethal injury. On the other hand, high levels of PPE are extremely bulky, and may restrict vision and movement, increasing the chance of an accident as well as increasing work time and difficulty.

NFPA 70E and CSA Z462 define five arc flash PPE categories which determine the proper level of PPE for a given task. The table below lists PPE required at each level. The risk level for a given task is determined either by conducting an arc flash risk assessment or by consulting Table 3-3.9.1 from NFPA 70E (see below), which lists hazard categories for a wide range of tasks. Using an engineering analysis to determine the incident energy and thus the required PPE is strongly recommended over the table method, and ensures the most appropriate PPE for the hazard and therefore the greatest protection for the worker. The results of an incident energy risk assessment to specify an arc flash PPE category is not permitted; rather, site-specific arc flash protection and PPE requirements must be decided on from the results. Reducing and managing incident energy exposure through engineering analysis can significantly impact and potentially reduce the required PPE for performing tasks on electrical equipment, a benefit that cannot be gained using the task tables and charts.

Arc Flash PPE Category	Incident Energy (cal/cm²)	Examples of PPE Required*
0	1.2 or lower	Non-melting clothing
1	1.2 – 4	AR shirt and pants
2	4 – 8	AR shirt and pants, cotton underwear
3	8 – 25	AR shirt and pants, AR Coveralls, cotton underwear
4	25 – 40 and higher**	AR shirt and pants, full-coverage flash suit, cotton underwear



Notes:

- \* Other combinations are possible; see NFPA 70E for details. Safety boots, face shields, and leather over voltage-rated gloves should be worn.
- \*\* Incident energy levels above 40 cal/cm<sup>2</sup> require special care to de-energize equipment when possible, as they represent the most extreme hazards. Some companies offer PPE rated above 40 cal/cm<sup>2</sup>, but in general this level of risk is considered impractical to protect against.

The PPE tables provided in NFPA 70E are valid only for limited ranges of available current and fault-clearing times, generally appropriate only for small facilities. In addition, the PPE requirements in the tables tend to be more conservative than what is required by a detailed risk assessment. Conducting a risk assessment is preferable to using the NFPA 70E tables.

PPE can protect workers against the risk of incurable burns, but it does little to prevent injury from other causes such as blast pressure, falls, or shrapnel.

#### Hand Protection

Gloves used for arc flash protection must be long enough to cover body parts that are exposed to the flash hazard. Gloves shall be of sufficient length to cover these parts until they overlap other flash protection, such as the sleeve of an arc flash rated flash-protection garment. The glove must cover any openings in the sleeve, such as the slit for the cuff. Voltage-rated gloves may be used for flash protection only when used with leather protectors.

Class of Glove**	AC Proof – Test Voltage rms, V	Maximum AC Use Voltage ac rms, V	Maximum DC Use Voltage avg, V
ANSI / ASTM D120 EN60903 Class 00	2,500	500	750
ANSI / ASTM D120 EN60903 Class 0	5,000	1,000	1,500
ANSI / ASTM D120 EN60903 Class 1	10,000	7,500	11,250

#### Rubber Insulating Gloves/Leather Protectors – ASTM Labelling Chart\*



Class of Glove**	AC Proof – Test Voltage rms, V	Maximum AC Use Voltage ac rms, V	Maximum DC Use Voltage avg, V
ANSI / ASTM D120 EN60903 Class 2	20,000	17,000	25,500
ANSI / ASTM D120 EN60903 Class 3	30,000	26,500	39,750
ANSI / ASTM D120 EN60903 Class 4	40,000	36,000	54,000

\* Adapted from ASTM International (American Society for Testing and Materials) D120-09 Standard Specification for Rubber Insulating Gloves

\*\* Label color is determined in ASTM D120. Each class of glove has its own label color to provide quick visual reference for end users.

#### **Arm Protection**

Arc flash rated sleeves are not permitted to be worn alone. Flash protection is always required for the arms. A long-sleeve shirt, jacket, or coverall is required that meets the Arc Rating category based on Incident Energy of the circumstance.

#### Leg Protection

Arc flash rated jackets or coats will not provide leg protection to the lower extremities. Hazard Category level appropriate pants or coveralls are required for leg protection. Care must be taken to ensure that the arc flash will not migrate under loose garments.

#### **Body Protection**

Body protection may include arc rated shirt and pants, jacket, lab coat, or coveralls. Arc flash rated (formerly FR) and natural fiber garments shall be permitted to be used for a layered system for added protection. A typical layering system may include an undershirt, a shirt, and trouser and coverall. Specific tasks may call for specific protection systems. Garments worn as outer layers over arc flash rated clothing, such as jackets or rainwear, shall also be made from arc flash rated material. Synthetic fibers that can melt shall be prohibited next to the skin. Natural fiber garments must be worn as under layers. Acceptable natural fabrics are cotton, wool, or silk. An incremental amount of elastic in underwear and socks is permitted.



#### Layering

Layering of arc rated clothing to achieve a desired Arc Flash Rating in cal/cm<sup>2</sup> protection is not an exact science. In some situations, the protection factor actually decreases. Arc Rated outerwear must meet or exceed the Flash Hazard rating that is provided on the equipment panel label.

#### Eye and Face Protection

Face shields and safety glasses shall be used to protect the eyes from flash. Safety glasses are



required at all times. Employees shall wear nonconductive, arc flash rated head protection whenever danger of head injury from electric shock or burns exists due to contact with live energized parts. All hard hats must meet at a minimum Type I Class E requirements. Metal framed glasses are not to be worn as part of Arc Flash PPE

NFPA 70E requires hearing protection for Arc Flash PPE Categories 2, 3 and 4. NFPA 70E describes hearing protection as ear canal inserts. Full earmuff types are also acceptable as long as they fit properly under the hood. It would not be necessary to use arc rated earplugs for categories 3 and 4 because NFPA 70E requires you wear a hood at these hazard risk category levels. The arc rated hood, tested under ASTM 2178, would not allow enough energy to be transmitted through the hood to ignite or melt the earplugs or muff type hearing protection. For categories 1 and 2, where NFPA 70E does not mandate the use of a hood, arc rated earplugs must be worn.

#### **Head Protection**

Class E (Electrical) Hard Hats are designed to reduce exposure to high voltage conductors, and offer dielectric protection up to 20,000 volts (phase to ground). This amount of voltage protection, however, is designated to the head only, and is not an indication of voltage protection allocated to the user as a whole. Only Class E Hard Hats are to be used.

#### Safety Foot Protection

Only footwear bearing the following CSA and ASTM symbols (see below) or markings are to be worn when performing with or around electricity.

#### **Protection Code**

An "internal protection code" is also required. This code will be permanently marked on the outside or inside of at least one shoe/boot, as shown below.

Position:	1	2	3	4	5
Mark:	1	Ρ	М	Е	х

#### Position:

1. Level of toe protection (1 for Grade 1, 2 for Grade 2, 0 if not)



- 2. Presence of puncture-resistant sole (P if present, 0 if not)
- 3. Presence of metatarsal protection (M if present, 0 if not)
- 4. Type of electrical protection (E if shock resistant, S if static dissipative, C if conductive, 0 if no protection)
- 5. Chainsaw protection (X if present, 0 if not)

(Taken from: Z195.1-02 Guideline on Selection, Care and Use of Protective Footwear, Canadian Standards Association, 2002.)

All footwear manufactured to the ASTM specification must be marked with the specific portion of the standard with which it complies. One shoe of each pair must be clearly and legibly marked (stitched in, stamped on, pressure sensitive label, etc.) on either the surface of the tongue, gusset, shaft or quarter lining.

The following is an example of an ASTM F2413-05 marking that may be found on protective footwear:

ASTM F2413-05 M I/75/C/75/Mt75 PR CS

Line #1: ASTM F2413-05:

This line identifies the ASTM standard it indicates that the protective footwear meets the performance requirements of ASTM F2413 issued in 2005.

#### Line #2: M I/75 C/75 Mt75:

This line identifies the gender [M (Male) or F (Female)] of the user. It also identifies the existence of impact resistance (I), the impact resistance rating (75 or 50 foot-pounds), compression resistance (C) and the compression resistance rating (75 or 50 which correlates to 2,500 pounds and 1,750 pounds of compression respectively). The metatarsal designation (Mt) and rating (75 or 50 foot-pounds) is also identified.

#### Lines 3 & 4: PR CS

Lines 3 and 4 are used to identify footwear made to offer protection from other specific types of hazards referenced in the standard. They are used to designate conductive (Cd) properties, electrical insulation properties (EH), footwear designed to reduce the accumulation of excess static electricity (SD), puncture resistance (PR), chain saw cut resistance (CS) and dielectric insulation (DI), if applicable. Line 4 is only used when more than three sections of the ASTM standard apply. Footwear bearing the ASTM markings must include "EH" in this line.



#### **Category Breakdown**

#### Requirements for Arc Flash PPE Category 0

Protective Clothing, Non-melting or Untreated Natural Fiber (i.e. untreated cotton, wool, rayon, or silk, or blends of these materials) with a fabric weight of at least 4.5 oz/yd<sup>2</sup>:

- Cotton undergarments
- Shirt (long sleeve)
- Pants (long)

Protective Equipment:

- Safety glasses or safety goggles (selection required)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves (as needed) (Note 1)
- Class E hard hat
- Shock resistant work boots

#### Requirements for Arc Flash PPE Category 1

Arc-rated (AR) Clothing, Minimum Arc Rating of 4 cal/cm<sup>2</sup> (Note 1)

- Cotton undergarments
- Arc-rated long-sleeve shirt and pants or arc-rated coverall
- Arc-rated jacket, parka, rainwear, or hard hat liner (as needed)

AR Protective Equipment:

- Safety glasses or safety goggles (selection required)
- Hearing protection (ear canal inserts)
- Heavy duty leather gloves (Note 1)
- Arc-rated face shield (Note 2) or arc flash suit hood
- Class E hard hat
- Shock resistant work boots

#### Requirements for Arc Flash PPE Category 2

AR Clothing, Minimum Arc Rating of 8 cal/cm<sup>2</sup> (Note 1)

- Cotton undergarments
- Short-sleeved "T" shirt
- Arc-rated coveralls or jacket and bibs or 50" coat with leggings; or
- Arc-rated long-sleeve shirt and pants



• Arc-rated jacket, parka, rainwear, or hard hat liner (as needed)

AR Protective Equipment:

- Safety glasses or safety goggles (selection required)
- Hearing protection (ear canal inserts)
- Arc-rated (12 cal) arc flash hood or Class E hard hat with arc rated face shield (Note 2) with sock balaclava
- Heavy duty leather gloves (Note 1)
- Shock resistant work boots

#### Requirements for Arc Flash PPE Category 3

AR Clothing, Minimum Arc Rating of 25 cal/cm<sup>2</sup> (Note 1)

- Arc-rated long-sleeve shirt (Note 3)
- Arc-rated pants (Note 4)
- Arc-rated coverall (Note 3)
- Arc-rated arc flash suit jacket (Note 3)
- Arc-rated arc flash suit pants (Note 3)
- Arc-rated arc flash suit hood (Note 3)
- Arc-rated jacket, parka, or rainwear (as needed)

AR Protective Equipment

- Hard hat
- Arc-rated hard hat liner
- Safety glasses or safety goggles (selection required)
- Hearing protection (ear canal inserts)
- Arc-rated gloves (Note 2)
- Leather work shoes
- Shock resistant work boots

#### Requirements for Arc Flash PPE Category 4

AR Clothing, Minimum Arc Rating of 40 cal/cm<sup>2</sup> (Note 1)

- Arc-rated long-sleeve shirt (Note 4)
- Arc-rated pants (Note 4)
- Arc-rated coverall (Note 4)
- Arc-rated arc flash suit jacket (Note 4)



- Arc-rated arc flash suit pants (Note 4)
- Arc-rated arc flash suit hood (Note 4)
- Arc-rated jacket, parka, or rainwear (as needed)

#### Notes:

*Note 1:* If rubber insulating gloves with leather protectors are required by Table 130.7(C)(15)(a) or 130.7(C)(15)(b), additional leather or arc flash gloves are not required. The combination of rubber insulating gloves with leather protectors satisfies the arc flash protection requirement.

*Note 2*: Face shields are to have wrap-around guarding to protect not only the face but also the forehead, ears, and neck or, alternatively, an arc–rated arc flash suit hood is required to be worn.

*Note 3*: An alternate is to use a total FR clothing system and hood, which shall have a minimum arc rating of 25 for Hazard/Risk Category 3.

*Note 4:* The total clothing system consisting of FR shirt and pants.





GHD | NA-SOP-HSE-030 Workplace Electrical Safety Program | Rev 1 – April 2017



## **Table of Contents**

1.	Electr	rical Safety Auditing	1
	1.1	Electrical Safety Program	1
	1.2	Field Work	1
	1.3	Documentation	1



## **1. Electrical Safety Auditing**

#### **1.1 Electrical Safety Program**

The electrical safety program shall be audited to verify that the principles and procedures of the electrical safety program are in compliance with this Standard. The frequency of the audit shall not exceed 3 years. If these audits find that the principles and procedures of the program are not being followed, appropriate revisions to the training program or revisions to procedures must be made.

#### 1.2 Field Work

Field work shall be audited to verify that the requirements contained in the procedures of the electrical safety program are being followed. When the auditing determines that the principles and procedures of the electrical safety program are not being followed, the appropriate revisions shall be made to the training program or revisions shall be made to the procedures.

#### **1.3 Documentation**

The audits shall be documented.



## Appendix F CAL/OSHA Specific Procedures for High Voltage Electrical Exposure and Live Line Tools

## Appendix F CAL/OSHA Requirements Live Line Tools

#### **Tool Design and Construction**

- Live line tools will be of proper design and construction. Live-line tool rods, tubes and poles shall be designed and constructed to withstand the following minimum tests:
- 100,000 volts per foot (3281 volts per centimeter) of length for 5 minutes if the tool is made of fiberglass-reinforced plastics (FRP), or
- 75,000 volts per foot (2461 volts per centimeter) of length for 3 minutes if the tool is made of wood, or
- Other tests COMPANY can demonstrate are equivalent.

#### Inspection

Each live line tool shall be and is wiped clean and visually inspected for defects before each day.

#### Defects

Tools will be removed from service if defects are found. If any defect or contamination that could adversely affect the insulating qualities or mechanical integrity of the live-line tool is present after wiping, the tool shall be removed from service and examined and tested according to paragraph (b)(3) of 1926.957 before being returned to service.

#### Scheduled Maintenance for Live Line Tools

Live-line tools used for primary employee protection shall be removed from service every 2 years for examination, cleaning, repair and testing. Live-line tools used for primary employee protection shall be removed from service every 2 years and whenever required under paragraph (j)(2)(ii) of 1910.269 (Electric Power Generation, Transmission and Distribution) for examination, cleaning, repair and testing.

#### Additional Guidelines

Guidelines for the examination, cleaning, repairing and in-service testing of live line tools are specified in the Institute of Electrical and Electronics Engineers' IEEE Guide for Maintenance Methods on Energized Power Lines, IEEE Std 516-2009.

#### Training

- Users of live line tools shall be trained on the requirements of this procedure prior to use of live line tools.
- Training shall be documented and retained in the employee training file.

# Appendix FCAL/OSHA RequirementsElectrical High Voltage

#### General Requirements for High Voltage Systems

#### Safe Access to Work Locations

All work locations shall be safely accessible whenever work is to be performed. Examples include:

- A clear working space must be maintained in the front, back and on each side of all electrical enclosures and around electrical equipment for a safe operation and to permit access for maintenance and alteration.
- A minimum two-foot working floor space in front of panels and enclosures shall be painted yellow.
- Employees may not enter spaces containing exposed energized parts unless adequate illumination is
  provided. Illumination shall be provided as needed to perform the work safely.
- Housekeeping in distribution rooms must receive high priority to provide a safe working and walking
  area in front of panels and to keep combustible materials to the minimum required to perform
  maintenance operations.
- All enclosures and distribution rooms must have "Danger: High Voltage Authorized Personnel Only" posted on the front panel and on entrance doors.
- Flammable materials are strictly prohibited inside distribution rooms (Boxes, rags, cleaning fluids, etc.).
- When an employee works in a confined or enclosed space that contains exposed energized parts, the employee shall isolate the energy source and turn off the source and lock and tag out the energy source (Only qualified electricians can work on an exposed energy source).
- Protective shields, protective barriers or insulating materials as necessary shall be provided.

#### **COMPANY** Responsibilities

COMPANY shall furnish such safety devices and safeguards as may be necessary to make the employment or place of employment as free from danger to the safety and health of employees as the nature of the employment reasonably permits. COMPANY shall examine or test each safety device at such intervals as may be reasonably necessary to ensure that it is in good condition and adequate to perform the function for which it is intended. Any device furnished by COMPANY found to be unsafe shall be repaired or replaced.

Employees shall be instructed to inspect each safety device, tool or piece of equipment, each time it is used and to use only those in good condition. COMPANY shall require the use of safety devices and safeguards where applicable.

Insulating equipment designed for the voltage levels to be encountered shall be provided by COMPANY. Insulating equipment designed for the voltage levels to be encountered shall be provided and employees shall be instructed to use the equipment.

#### **Qualified Electrical Workers**

Only qualified electrical workers shall work on energized conductors or equipment connected to energized high-voltage systems. Except for replacing fuses, operating switches, or other operations that do not require the employee to contact energized high-voltage conductors or energized parts of equipment, clearing "trouble" or in emergencies involving hazard to life or property, no such employee shall be assigned to work alone. Employees in training, who are qualified by experience and training, shall be permitted to work on energized conductors or equipment connected to high-voltage systems while under the supervision or instruction of a qualified electrical worker.

#### Observers

During the time work is being done on any exposed conductors or exposed parts of equipment connected to high-voltage systems, a qualified electrical worker, or an employee in training, shall be in close proximity at each work location to:

- Act primarily as an observer for the purpose of preventing an accident.
- Render immediate assistance in the event of an accident. Such observer will not be required in connection with work on overhead trolley distribution circuits not exceeding 1,500 volts D.C. where there is no conductor of opposite polarity less than 4 feet there from, or where such work is performed from suitable tower platforms or other similar structures.

#### Suitable Temporary Barriers or Barricades

Covers or barriers must be installed on boxes, fittings and enclosures to prevent accidental contact with live parts. Suitable temporary barriers or barricades shall be installed when access to opened enclosures containing exposed energized equipment is not under the control of an authorized person.

In locations where electric equipment is likely to be exposed to physical damage, enclosures or guards shall be so arranged and of such strength as to prevent such damage.

Entrances to rooms and other guarded locations containing exposed live parts shall be marked with conspicuous warning signs forbidding unqualified persons to enter.

#### Placement of Warning Signs When Equipment is Working Around or Near Overhead Power Lines

COMPANY or the owner, agent, or employer responsible for the operations of equipment shall post and maintain in plain view of the operator and driver on each crane, derrick, power shovel, drilling rig, hay loader, hay stacker, pile driver, or similar apparatus, a durable warning sign legible at 12 feet reading: "Unlawful To Operate This Equipment Within 10 Feet Of High-Voltage Lines of 50,000 Volts Or Less."

#### Overhead and Energized High-Voltage Power Lines

Safe guards shall be in place when working on or near overhead power lines. COMPANY nor any person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized high-voltage lines; to enter upon any land, building, or other premises and there engage in any excavation, demolition, construction, repair, or other operation; or to erect, install, operate, or store in or upon such premises any tools, machinery, equipment, materials, or structures (including scaffolding, house moving, well drilling, pile driving, or hoisting equipment) unless and until danger from accidental contact with said high-voltage lines has been effectively guarded against.

## Safe Clearance Distance During Operations of Boom-Type Lifting or Hoisting Equipment from Overhead Power Lines

The erection, operation or dismantling of any boom-type lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth is strictly prohibited.

#### Minimum Approach Distances

When performing work with live line tools, minimum clear distances shall be maintained. Conductor support tools, such as link sticks, strain carriers and insulator cradles shall be permitted to be used provided that the clear insulation is at least as long as the insulator string or the minimum distance specified for the operating voltage.

#### Requirements Before Work is Performed on Exposed Energized Parts of Equipment or Systems

Work shall not be performed on exposed energized parts of equipment or systems until the following conditions are met:

- Responsible supervision has determined that the work is to be performed while the equipment or systems are energized.
- Involved personnel have received instructions on the work techniques and hazards involved in working on energized equipment.
- Suitable personal protective equipment and safe guards (i.e., approved insulated gloves or insulated tools) are provided and used.

Conductive measuring tapes, ropes or similar measuring devices and conductive fish tapes shall not be used when working on or near exposed energized conductors or parts of equipment. Conductive fish tapes shall not be used in raceways entering enclosures containing exposed energized parts unless such parts are isolated by suitable barriers.

#### Lock Out/Tag Out

- While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.
- If any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both.
- All electrical equipment and systems shall be treated as energized until tested or otherwise proven to be de-energized.
- Per COMPANY policy all electrical will be outsourced and performed only by qualified and licensed electrical contractors who are familiar with the use of special precautionary techniques, PPE, insulating and shielding materials and insulated tools. Any equipment being made ready for maintenance will be locked out using COMPANY's Control of Hazardous Energy Lock Out/Tag Out Program. Lockouts are performed by the HSE Manager, Shop Foreman or Branch Manager. Designated employees in some branches may be trained by local management to lock out equipment. If live sources are to be worked it will only be performed with the knowledge of local management. Only certified electricians may work on electric circuit parts or equipment.
- Authorized Person duties after the required work on an energized system or equipment The authorized person shall be responsible for removing from the work area any temporary personnel protective equipment and reinstalling all permanent barriers or covers.

- Authorized personnel will be trained in lock out/tag out procedures.
- Affected personnel will be notified when lock out/tag out activities are being performed in their work area.

#### Inspections

- Employees shall be instructed to inspect each safety device, tool or piece of equipment. Employees shall be instructed to inspect each safety device, tool or piece of equipment, each time it is used and to use only those in good condition.
- COMPANY requires the use of safety devices and safeguards where applicable.
- The use of a hard fixed GFCI or a portable GFCI adapter shall be used with all portable hand tools, electric extension cords, drop lights and all 110 volt equipment.
- Defective insulating equipment is removed from service immediately. Insulating equipment and any other electrical equipment or material found to be defective or damaged shall be immediately removed from service.

#### Periodic Testing

- Periodic visual and electrical re-testing of all insulating gloves, sleeves and blankets shall be made at the prescribed intervals. Insulated gloves, sleeves and blankets must be visually inspected and electrically re-tested periodically at prescribed intervals or when found to be damaged or defective.
- Insulating equipment shall be marked with the latest test date or the next test due on. Gloves, sleeves
  and blankets shall be marked to indicate compliance with the re-test schedule and shall be marked
  with either the date tested or the date the next test is due.

#### Repairs

- Only Qualified Personnel, who have been authorized by the department supervisor or manager, may make repairs to supply cords on electrical tools and to extension cords.
- The names of employees authorized to make repairs will be posted in the workplace.
- Only certified electricians shall be allowed to make repairs to electrical equipment and wiring systems.
- The supervisor obtaining the services of a certified electrician is responsible to verify the electrician's credentials.
- Employees shall not enter spaces containing exposed energized parts unless qualified and proper illumination exists to enable employees to work safely.
- Employees shall not wear conductive apparel such as rings, watches, jewelry, etc. (unless they are rendered non-conductive by covering, wrapping, or other insulating means) while working on or near open energized equipment this includes batteries on trucks, forklifts, phone backup systems or other such equipment.
- If employees are subject to handle long dimensional conductor objects (ducts or pipes), steps for safe work practices shall be employed to ensure the safety of workers.

#### Ladders

- Only approved, non-conductive ladders, may be used when working near or with electrical equipment, which includes changing light bulbs.
- Ladders must be either constructed of wood, fiberglass, or have non-conductive side rails.

- Wood ladders should not be painted, which can hide defects, except with clear lacquer.
- When using ladders they shall be free from any moisture, oils, and greases.

#### Switches, Circuit Breakers and Disconnects

- All electrical equipment and tools must have an on and off switch and may not be turned on or off by plugging or unplugging the supply cord at the power outlet.
- Circuit breaker panel boxes and disconnects must be labeled with the voltage rating.
- Each breaker within a breaker panel must be labeled for the service it provides.
- Disconnect switches providing power for individual equipment must be labeled accordingly.

#### Contractors

- Only approved, certified, electrical contractors may perform construction and service work on COMPANY or client property.
- It is the Manager/Supervisors responsibility to verify the contractor's certification.

#### Fire Extinguishers

- Approved fire extinguishers must be provided near electrical breaker panels and distribution centers.
- Water type extinguishers shall not be located closer than 50 feet from electrical equipment.

#### Equipment Grounding

- All gas compressors, air compressors, separators, vessels, etc. shall be grounded by means of using a lug and ground strap, nominal in size to a <sup>1</sup>/<sub>2</sub>" bolt or larger, attached to a ground rod six feet or longer.
- Equipment bonding jumpers shall be of copper or other corrosion-resistance material.
- The transfer of hazardous or flammable material from a metal or plastic container with a flash point of 100 degrees F or less shall have a ground strap from the container and attached to the skid or a ground rod placed in the ground.

#### Training

All affected employees will be trained in high voltage electrical safety requirements and the training shall be documented.

Safe work practices shall be employed to prevent electric shock or other injuries resulting for either direct or indirect electrical contacts when work is performed near or on equipment or circuits which are or may be energized.

#### Electric Shock-CPR

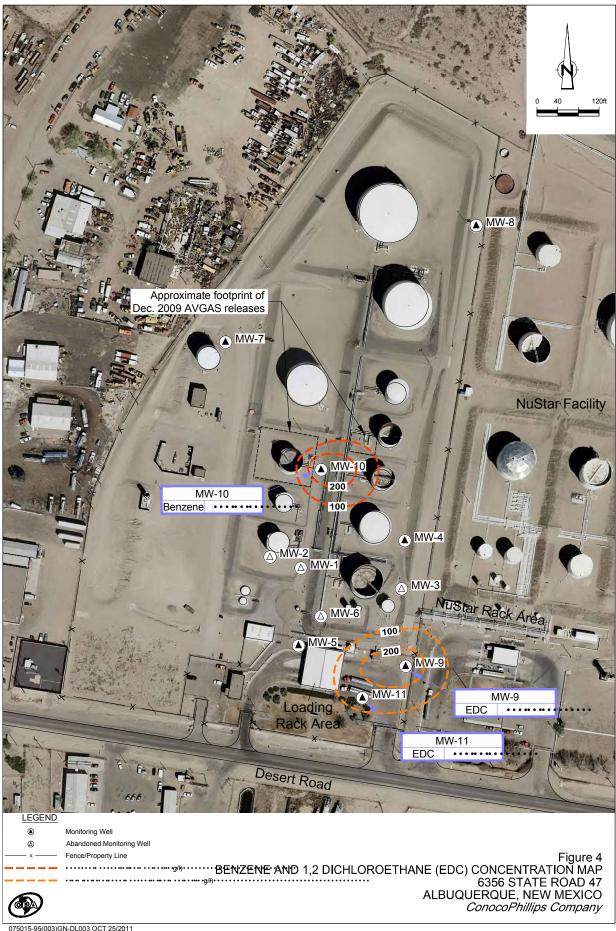
- If someone is discovered that has received an electric shock and is unconscious, first check to see if their body is in contact with an electrical circuit. Do not touch a person until you are sure there is no contact with an electrical circuit.
- When it is safe to make contact with the victim, begin CPR if the person's heart has stopped or they are not breathing.

Call for help immediately.

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Figure Benzene and EDC Concentration Map (Showing Location of EDC and AVGAS/Benzene Plumes



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# about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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