



EA Engineering, Science, and Technology, Inc., PBC  
320 Gold Avenue SW, Suite 1300  
Albuquerque, New Mexico 87102  
Phone: (505) 224-9013

December 3, 2021

Mr. Cory Smith  
Environmental Bureau  
EMNRD - Oil Conservation Division  
5200 Oakland Avenue NE, Suite 100  
Albuquerque, New Mexico 87113

**RE: Removal of Visual Petroleum Hydrocarbon and Chloride Surface  
Impacts from the Appling Property Release  
South Side of US 62/180 in the Vicinity of the Sands RV Park  
Carlsbad, New Mexico**

Dear Mr. Smith:

EA Engineering, Science, and Technology, Inc., PBC (EA) is pleased to submit this work plan to the New Mexico Energy, Minerals and Natural Resources Department (EMNRD) Oil Conservation Division (OCD) Environmental Bureau for removal of visual petroleum hydrocarbon and chloride impacts to surface soils resulting from the Appling property release. The focus of the project activities covered under this work plan will be on properties located south of Highway US 62/180 (the Highway) in the vicinity of the Sands RV Park. The work will be conducted under EA's price agreement # 10-52100-21-06041.

**Background Information**

On the evening of October 29, 2021, a 10,000+ barrel tank located on the property of Thomas Appling, 2410 East Greene Street (US 62/180), Carlsbad, New Mexico, failed catastrophically. The water from the release reportedly toppled two downgradient waste tanks, overflowed a lined pit, and then flowed across the Appling property to the southeast. The release flowed through a culvert beneath Highway US 62/180 and onto several properties south of the highway. Photos taken after the release by Mr. Chad Hensley of the OCD show an extensive area of impact on the Appling property on the north side of the highway and on several properties south of the highway, including the Sands RV Park and a private residence.

On November 10, 2021, EA mapped the approximate extent of the release on the south side of US 62/180 based on visual observation of petroleum hydrocarbon and chloride surface staining. Grab surface soil and fluid/aqueous samples were collected from select locations within the extent of the release area on the Appling property and from impacted properties on the south side of the highway. The samples were submitted to Hall Environmental Analysis Laboratory for the following analyses:

- U.S. Environmental Protection Agency (EPA) Method 8021 for benzene, toluene, ethylbenzene, and total xylenes (BTEX);
- EPA Method 8015 for TPH gasoline range organics (GRO), diesel range organics (DRO),

- and motor oil range organics (MRO);
- EPA Method 6010/7471 for select metals including arsenic, barium, cadmium, lead, and mercury; and
- EPA Method 300.0 for chloride.

The approximate extent of the release mapped by EA and the locations of the surface soil and fluid/aqueous samples are shown on Figure 1. The letter report documenting the sampling was submitted to the OCD on December 2, 2021. Laboratory analytical results from the surface soil samples collected indicated the following:

- TPH impacts extend approximately 1,700 feet to the southeast (sample location SS-13) from the culvert on the south side of the highway and approximately 1,400 feet to the south-southeast of the Garner residence (sample location SS-11) (Figure 1).
- Chloride impacts extend approximately 1,700 feet to the southeast (sample location SS-13) from the culvert on the south side of the highway and approximately 1,400 feet to the south-southeast of the Garner residence (sample location SS-11) (Figure 1).
- Visual chloride impacts (salt crusted surface) are observable over a larger area, particularly in the eastern portion of the Sands RV Park and to the south-southeast of the Garner residence (Figure 1).
- Analytical results from surface soil samples collected at a number of locations on the north and south sides of the highway exceeded the OCD standards for groundwater between 51 and 100 feet bgs specified in Table 1 of 19.15.29.12 NMAC. These included the following:
  - Chloride (10,000 mg/Kg) at sample locations SS-11 (20,000 mg/Kg), SS-14 (27,000 mg/Kg), SS-16 (10,000 mg/Kg), and BG-2 (12,000 mg/Kg)
  - TPH (GRO+DRO+MRO) (2,500 mg/Kg) at sample locations SS-2 (3,158 mg/Kg), SS-5 (23,127 mg/Kg), SS-6 (17,732 mg/Kg), SS-10 (6,300 mg/Kg), SS-11 (4,200 mg/Kg), SS-14 (6,500 mg/Kg), SS-15 (5,100 mg/Kg), and SS-16 (13,900 mg/Kg)

## Scope of Work

Areas of visual petroleum hydrocarbon and chloride surface staining identified for removal were assessed during the surface soil and fluid/aqueous sampling conducted on November 10, 2021, and EA's follow up site visit on November 17, 2021.

### *Project Planning*

Prior to mobilizing to the site, the following project planning and premobilization tasks will be completed by EA and/or Gandy Marley:

- Prepare a work plan and cost estimate for performance of the scope of work (SOW);
- Secure access with the New Mexico Department of Transportation (NMDOT) for excavation

in the bar ditch on the south side of the highway, Mr. Michael Garner (owner of the house and surrounding property to the west of the RV Park), and Mr. Scott Goodale (owner of the RV Park and the property between the highway and Mr. Garner's house);

- Prepare a traffic control plan for excavation in the bar ditch on the south side of the highway;
- Prepare a site-specific Health and Safety Plan in accordance with the requirements of 40 CFR 1910.120 to cover the proposed project activities;
- Call NM 811 to have subsurface utilities in the project area located and marked;
- Subcontract with the excavation contractor and analytical laboratory; and
- Order and pick up sample kits from the analytical lab for post removal soil sampling.

#### *Removal of Visual Petroleum Hydrocarbon and Chloride Impacts*

EA and Gandy Marley will mobilize to the site to complete removal of visual petroleum hydrocarbon and chloride impacts after completion of the project planning tasks identified above. Gandy Marley will provide soil removal, hauling, backhauling, and backfilling services. Lee Land LLC will be the landfill used for disposal. EA will provide excavation oversight and inspection and clearance of scraped areas and perform post removal soil sampling and shipment of samples.

EA has budgeted up to 2,500 tons of impacted soil/gravel (1,667 cubic yards [yd<sup>3</sup>] bank) for removal and disposal based on the visual petroleum hydrocarbon and chloride surface staining assessments performed on November 10 and 17, 2021 (Figure 2). This includes the following areas:

- Approximately 150,000 square feet (ft<sup>2</sup>) in the fenced area south of the highway and the northern driveway to Mr. Garner's house. The surface of this area will be scraped to a depth of approximately 1-inch, which will result in the removal of approximately 463 yd<sup>3</sup> of soil/gravel.
- Approximately 100,000 ft<sup>2</sup> area around Mr. Garner's house. Petroleum hydrocarbon-coated weeds will be removed, and the surface of this area will be scraped to a depth of approximately 3-inches, which will result in the removal of approximately 926 yd<sup>3</sup> of soil.
- Approximately 250 to 300 yd<sup>3</sup> of soil in areas where ponding of water/fluid occurred along the south side of the highway, along the southern fence line of the property to the north of Mr. Garner's house, and the along the south side of the RV park.

#### *Post Removal Soil Sampling*

Soil sampling will be conducted after removal of petroleum hydrocarbon and chloride surface staining in the above areas. The samples will be collected every 2,500 ft<sup>2</sup> (50-foot centers) as agreed to by the OCD. The soil samples will be submitted to the analytical laboratory for TPH GRO/DRO/MRO and chloride analysis using EPA Methods 8015 and 300.0, respectively. Assuming the square footage of the areas identified above, and the sampling frequency requested by the OCD, EA estimates that 100 samples will be collected. The samples will be collected with a

decontaminated spade from approximately 3 to 6 inches below ground surface and placed into laboratory-provided sample containers, labeled, and placed on ice in a cooler pending delivery to the analytical laboratory. Disposable gloves will be worn and replaced between samples. Sampling equipment will be decontaminated prior to use and between samples using a laboratory-grade detergent and fresh tap water rinse.

### *Reporting*

Upon completion of removal of observable petroleum hydrocarbon and chloride surface staining, and receipt of analytical data from post removal soil sampling, EA will prepare a report for submission to the OCD documenting project activities. The report will include a site plan showing areas and depths of excavation, a map showing TPH and chloride concentrations in post removal soil samples, photographs documenting field activities, tabulated soil sample analytical results, landfill disposal tickets, and a copy of the analytical laboratory report. The report will be submitted to the OCD within 4 weeks after receipt of the sample analytical results.

### *Cost and Assumptions*

EA will perform the scope of services in accordance with the cost proposal included in Attachment 1. The estimated cost is based on removal and disposal of 2,500 tons of visually impacted soil. The cost proposal includes line items approved in EA's price agreement # 10-52100-21-06041, where available. For line items not included in EA's price agreement, costs will be passed through to OCD as shown. Gandy Marley's cost estimate for these pass-through items is provided in Attachment 2.

The total cost to complete the scope of work is \$343,403.00 (including NMGR of 7.875%). This cost is an estimated budget based on present knowledge of the assignment that is believed to be sufficient to cover the above services, but no guarantee is made or implied. Only actual costs incurred will be charged if costs are less than estimated, but estimated costs will not be exceeded and work will stop, and not continue, without your written approval to increase the ceiling above the contracted amount in the event field activities extend beyond the budgeted 10 days.

The following assumptions have been included in developing the cost proposal:

- Removal of 2,500 tons of TPH and chloride visually-impacted soil.
- The project will be completed within 2 weeks (10 business days). The bulk of the project includes removal of weeds, scraping 1-3-inches of surface soil, staging, and inspection. This activity constitutes cleaning a surface rather than excavation of a thicker volume of contaminated soil and is therefore a slower process with respect to cubic yards per hour than deep excavation.
- EA will staff the project with two field geologists. One will provide excavation oversight and inspection and clearance of scraped areas; the second will perform post removal soil sampling and ship the samples. Due to the number of samples, daily shipping will be required.
- Access will be granted by the NMDOT for excavation within the bar ditch on the south side of US 62/180. It is anticipated that numerous utilities are located within the ditch and that removal of impacted soils will not take place where clearance from utilities prohibits.
- Access will be granted by private landowners.
- Numerous utilities (some buried only a few inches below ground surface) are located in the project area, particularly around Mr. Garner's house. It is assumed that all of these utilities

can be identified and marked by NM 811, local utility companies, or by property owners without the use of a private utility locator.

- Shallow scraping of soil up to 3-inches deep can be completed over the coast to coast fiber optic line that runs east-west through Mr. Garner's property.
- Chain link and barbed-wire fences will need to be removed prior to soil scraping and removal and put back up after project completion.
- Numerous broken down vehicles, boats, and general junk and debris will need to be removed from around Mr. Garner's house prior to soil scraping and removal.
- EA has budgeted for the removal of 2,500 tons of impacted soil and 100 post removal soil samples. In the event that additional removal of visually impacted soil above the scoped 2,500 tons is required, EA will notify the OCD project manager prior to removal to request access to contingency or request a change order if contingency will not cover the additional soil removal and disposal costs. Soil samples above the budgeted amount of 100 samples will be charged at a rate of \$95 per sample. Collection of any additional samples will be preapproved by the OCD project manager and will be paid for with contingency.

EA greatly appreciates the opportunity to serve you on this project. If you have any questions or need additional information, please feel free to contact me at (505) 235-9037.

Sincerely,

**EA Engineering, Science, and Technology, Inc., PBC**

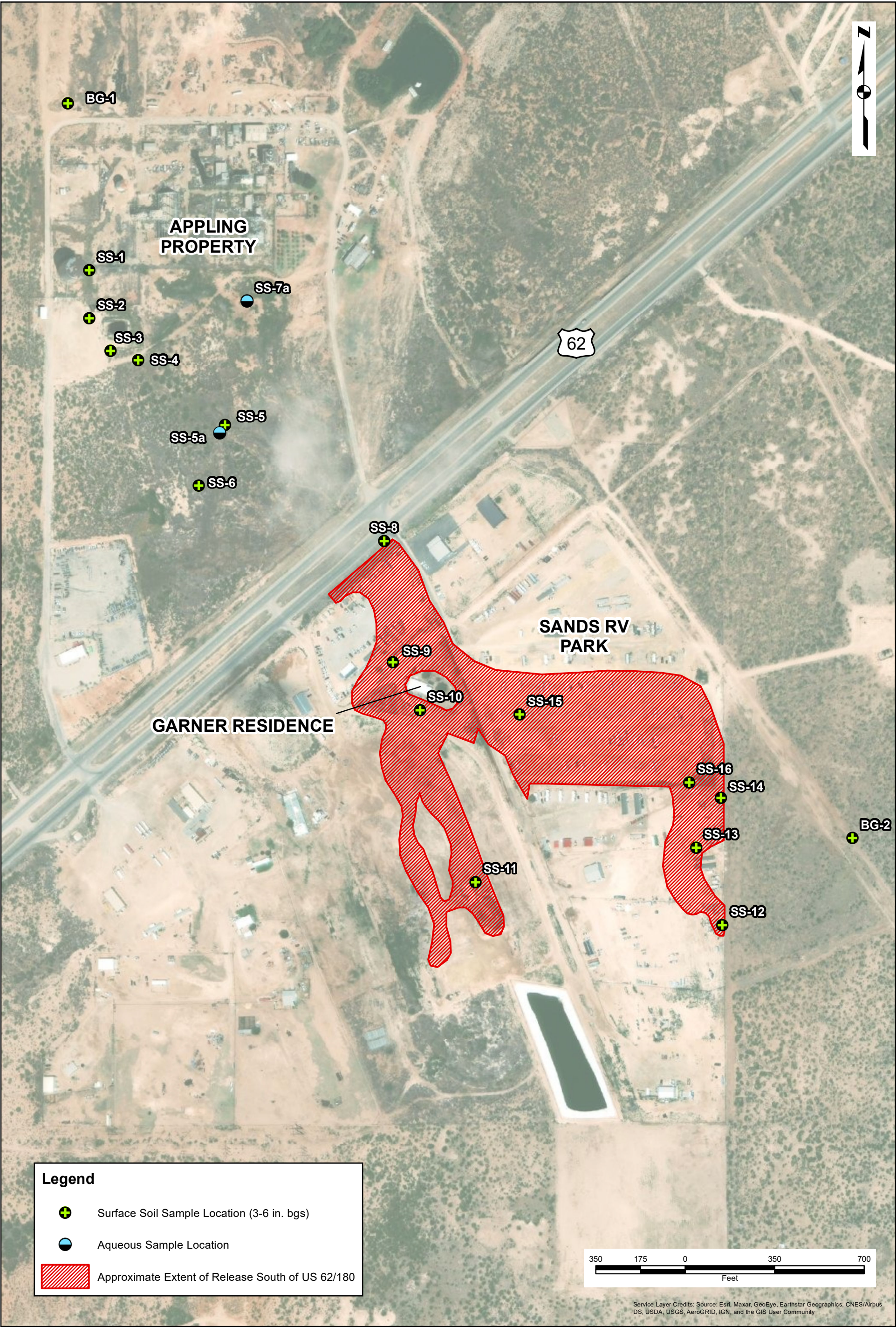


Michael D. McVey, P.G., C.P.G.  
Senior Hydrogeologist

Attachments: Figure 1 – Site Map  
Figure 2 – Excavation Areas  
Attachment 1 – Cost Proposal  
Attachment 2 – Gandy Marley Pass-Throughs

## FIGURES





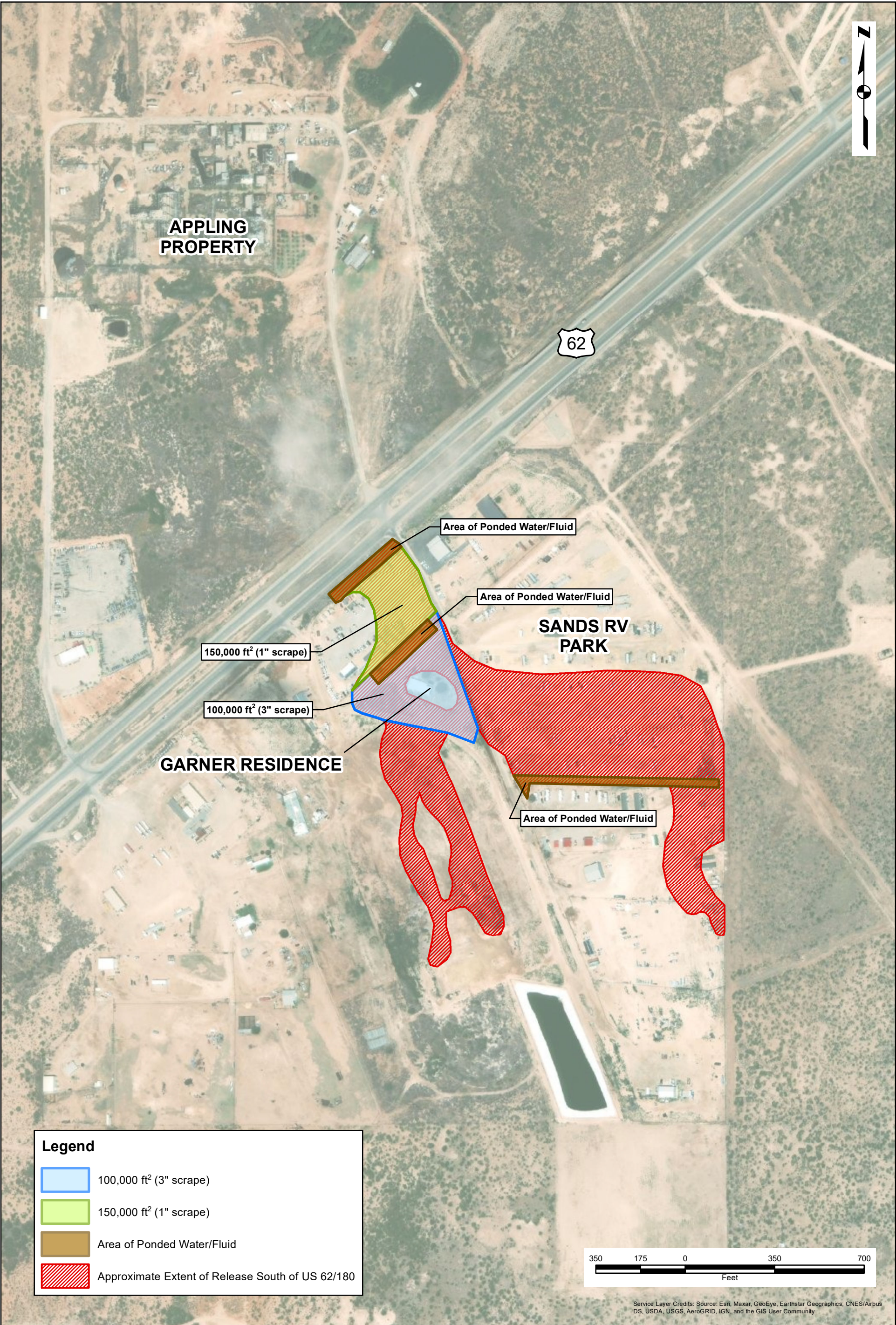
**Legend**

- Surface Soil Sample Location (3-6 in. bgs)
- Aqueous Sample Location
- Approximate Extent of Release South of US 62/180



Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community





EA Engineering,  
Science, and  
Technology, Inc., PBC

Removal of Visual TPH and Chloride Impacts,  
Properties South of US 62/180

**Figure 2**  
**Excavation Areas**



**ATTACHMENT 1**  
**COST PROPOSAL**

**Cost Proposal**  
**Removal of Visual Petroleum Hrdocarbon and Chloride**  
**Surface Impacts from the Appling Release**  
**Carlsbad, New Mexico**

<b>Labor, EA Travel and Per Diem<sup>1</sup></b>					
<u>Preparation/Access/HASP/Subcontracting</u>	Unit	Unit Price <sup>1</sup>	# Units	Extended	Notes <sup>2</sup>
Principal	HR	\$ 180	4	\$ 720	Coordinate with OCD, direct staff, waste manifest authority
Senior Scientist	HR	\$ 115	8	\$ 920	Coordinate access, review HASP, coordinate subcontractors
Project Scientist	HR	\$ 90	8	\$ 720	HASP, equipment check, load, laboratory coordination
Staff Scientist	HR	\$ 70	4	\$ 280	Load equipment
<u>Field Activities</u>					
Principal	HR	\$ 180	10	\$ 1,800	Coordinate with OCD one hour per field day
Senior Scientist	HR	\$ 115	30	\$ 3,450	Direct field activities
Project Scientist	HR	\$ 90	132	\$ 11,880	Site control, contractor oversight; manifests; measurement
Staff Scientist	HR	\$ 70	132	\$ 9,240	Soil Sampling, gps locations
Pickup Truck	Day	\$ 155.05	11	\$ 1,706	
Per Diem	Day	\$ 151	22	\$ 3,322	
<u>Reporting</u>					
Principal	HR	\$ 180	2	\$ 360	Senior technical review and QC
Senior Scientist	HR	\$ 115	8	\$ 920	
Project Scientist	HR	\$ 90	40	\$ 3,600	
Staff Scientist	HR	\$ 70	40	\$ 2,800	
Draftsperson	HR	\$ 67	24	\$ 1,608	
<b>Labor, EA Travel and Per Diem Subtotal</b>				<b>\$ 43,326</b>	



**Cost Proposal**  
**Removal of Visual Petroleum Hydrocarbon and Chloride**  
**Surface Impacts from the Applying Release**  
**Carlsbad, New Mexico**

<b>Field Equipment and Supplies<sup>1</sup></b>					
Photo-ionization Detector	Day	\$ 83.39	10	\$ 834	
GPS Receiver	Day	\$ 148.91	10	\$ 1,489	
Field Supplies	Day	\$ 50	10	\$ 500	Ice, baggies, pin flags, safety supplies, deionized water; at cost
<b>Field Equipment and Supplies Subtotal</b>				<b>\$ 2,823</b>	

<b>Heavy Equipment<sup>1</sup></b>					
Item	Unit	Unit Price <sup>1</sup>	# Units	Extended	Notes <sup>2</sup>
Dump Truck	Day	\$ 1,170	36	\$ 42,120	22 tons per load, 114 loads, 2 hour cycle/load, includes mob/demob
Roller - Smooth Drum	Day	\$ 1,230	6	\$ 7,380	1 / 5; Compact imported fill
Tanker Truck / Water Truck	Day	\$ 1,170	11	\$ 12,870	1 / 10; Dust control and compaction
Backhoe	Day	\$ 1,062	11	\$ 11,682	1 / 10; Excavate and site work, 15 CY/hour production
Skidsteer	Day	\$ 970	6	\$ 5,820	1 / 5; Clearing and soil stockpile
D6 Dozer	Day	\$ 1,750	11	\$ 19,250	1 / 10; Scraping and ripping shallow excavations
End Loader	Day	\$ 1,132	11	\$ 12,452	1 / 10; Stockpiling and Loading
Pickup Truck	Day	\$ 155.05	22	\$ 3,411	1 / 10; Crew travel and site work
Construction Supervisor	HR	\$ 68.65	96	\$ 6,590	One supervisor on site, duration of project
Laborers	HR	\$ 26.85	288	\$ 7,733	Three laborers on site, duration of project
Per Diem	Day	\$ 151	0	\$ -	Not anticipated, G-M will travel to and from site daily
<b>Heavy Equipment, Contractor Labor, Per Diem Subtotal</b>				<b>\$ 129,308</b>	

**Cost Proposal**  
**Removal of Visual Petroleum Hrdocarbon and Chloride**  
**Surface Impacts from the Appling Release**  
**Carlsbad, New Mexico**

<b>Contractor Provided Rates<sup>3</sup></b>					
Disposal	Ton	\$ 30	2500	\$ 75,000	Gandy Marley; at cost
Backfill	Ton	\$ 12	2500	\$ 30,000	Gandy Marley; at cost
Road Grader	Day	\$ 920	11	\$ 10,120	Gandy Marley; at cost
Hydro Vac	Hr	\$ 300	10	\$ 3,000	Gandy Marley; at cost
Location Service	LS	\$ 1,000	1	\$ 1,000	Gandy Marley; at cost
Barricades / Traffic	LS	\$ 841.06	5	\$ 4,205	Gandy Marley; at cost
Logistics Support	LS	\$ 800	1	\$ 800	Gandy Marley; at cost
Crew travel time	Day	\$ 510	10	\$ 5,100	5 crew x 3 hrs RT x \$34/hr
Analytical Laboratory	Each	\$ 95	100	\$ 9,500	HEAL; chloride and TPH full-range; at cost
Shipping	day	\$ 100	10	\$ 1,000	FedEx or UPS overnight cooler shipments; at cost
Performance bond (1%)	LS	\$ 3,152	1	\$ 3,152	At cost
<b>Contractor Provide Rates Subtotal \$ 142,877</b>					

**Total Cost w/o NMGR T \$ 318,334**

**NMGR T (7.875%) \$ 25,069**

**TOTAL COST \$ 343,403**

**Notes:**

1 Price Agreement 10-52100-21-06041 Rates

2 1 / 5 = Days Preparation+Mobilization+Demobilization / Days Site Work

3 See attached contractor bid

HASP = Health and Safety Plan



**ATTACHMENT 2**  
**GANDY MARLEY PASS-THROUGHS**

Gandy Corporation  
P.O. Box 2140  
Lovington, NM 88260

December 3, 2021

EA Engineering  
Attn: Michael McVey

Gandy Corporation would like to take this opportunity to submit an estimate to work on your location on the Sands RV Park. We will furnish equipment, and labor to dig and haul to Lea Land with backfill coming back to site.

- Soil Disposal \$30/ton x 2,500 tons
- Clean Fill \$12/ton x 2,500 tons
- Travel time 3 hrs./person/day, 5 people, \$510/day
- Road Grader \$115/hr, \$920/day
- Hydro Vac \$300.00/hr x 10 hrs.
- Traffic control plan \$4,205.29 for 5 days, \$841.06/day
- Private Locator \$1,000.00
- Porta potties, temporary fence \$800.00

All this plus tax. This bid is good for 30 days from the date written.

If we can be of further service to you, please do not hesitate to call us at any time at (575) 369-5161.

Sincerely,  
Rick Dunlap