



October 30, 1996

Mr. Byron Shark
Contracting Officer's Representative
U.S. Department of Agriculture
Forest Service
Rocky Mountain Region
P.O. Box 25127
Lakewood, CO 80225-0127

RE: Workplan for Mitigation of Contaminated Water Supply, Nemo Work Station, Nemo, South Dakota; Contract No. 53-84N8-6-005, Hazardous Waste Remediation, Activity III; Work Order No. 2.

Dear Mr. Shark:

EnviroSearch is pleased to submit this proposal for mitigation of contaminated water supplies in the vicinity of the Nemo Work Station near Nemo, South Dakota. The pesticide ethylene dibromide (EDB) has been detected in water supplies for residences near the Nemo Work Station. Activities described in this proposal are designed to provide a water treatment system for two remote residences located south of the release site and a recommended approach for provision of uncontaminated water for the remaining residences in Nemo.

The following scope of work includes tasks necessary to evaluate water treatment options, alternative water supplies, and implementation of a treatment system as an interim or final action for remote residences in the area. If desired, EnviroSearch can modify this proposed workplan for submittal to state regulatory agencies.

SCOPE OF WORK

Task 1 - Data Collection

To assist in our evaluation of options for an alternative water supply, key background data will be collected and reviewed. This will include information not collected as part of other Work Orders.

Task 2 - Evaluation of Treatment Alternatives for Nemo Area

Water testing conducted by the USFS has identified elevated concentrations of EDB in wells providing potable water to residences in the Nemo area. This task will include a review of treatment alternatives including various technologies (e.g., activated carbon, reverse osmosis, air stripping, etc.) and system configurations (individual units versus a community treatment system). Factors that will be evaluated include procurement cost, maintenance requirements, disposal costs, permanence of remedy, ease of implementation, and effectiveness.

Assumptions:

- Available water quality data (collected under Task 1) will include iron, manganese, total dissolved solids, fecal coliform, cryptosporidium and giardia concentrations in all wells requiring treatment.
- No contaminants requiring treatment (other than EDB) are present in the water supply.

Work under this task has been partially completed to support USFS immediate needs.

Task 3 - Treatment System for Remote Residences

In addition to wells in the immediate Nemo area, water testing conducted by the USFS has identified elevated concentrations of EDB in wells providing water to two residences located approximately 3,000 feet southeast of the potential release site. The distance between these residences and the Nemo area is likely to preclude immediate inclusion of these two residences in the treatment approach developed for Nemo. Therefore, one option to be specifically evaluated and considered by the USFS includes the installation of a separate treatment system for these remote residences as an interim or final action. Activated carbon has been selected for this action on the basis of proven effectiveness and prompt availability.

EnviroSearch will design, procure, and install a water treatment system including two activated carbon filters, particulate pre-filter, and distribution piping to connect to the two residences. The water treatment and distribution system will be automatic and self-contained, minimizing interference with occupants of the residences. The new water treatment system will be set on a concrete pad and enclosed in a separate structure. Insulation and electric heating will be provided as required for frost protection. The scale of the proposed carbon system is determined by the residence time required to remove EDB and the need for

pressurized vessels, rather than carbon usage rate. One water meter will be installed to provide a measurement of total gallons treated. This information can be used in conjunction with water analyses to determine when carbon replacement is required.

Assumptions:

- A location for the treatment system will be provided in the immediate vicinity of the residences. Our cost estimate includes no allowance for acquisition of this property. We assume USFS personnel will conduct all required negotiations to secure use of a suitable location.
- One of the water supply wells currently serving the residences will be selected to provide water to the treatment system. This will likely be the deepest well with the least contamination. Both residences will be supplied from this single well. This proposal assumes one of the existing wells will produce sufficient water for both residences and the pump installed in this well will be adequate to pump this water through the treatment system.
- Iron, manganese and other dissolved solids are of low enough concentrations to preclude carbon fouling or can be treated by a water conditioner already in place at one residence.
- This proposal assumes electrical power will be provided from an existing service at one of the residences. No separate electric meter or associated costs for increased electrical usage is included in the proposal.
- Estimated costs for carbon vessels assumes a two week delivery schedule. If the treatment system will not be installed for three to four weeks a significant cost savings can be achieved through use of different vendors.
- Residences are within 300 feet of each other and a service line can be trenched below the freeze line (assume 6 feet below ground surface). Much of the subsurface trenching may not be necessary if a temporary water distribution system currently being installed by the USFS is sufficient.
- Water samples for laboratory analysis of EDB will be collected during system startup. No additional monitoring or maintenance is included.

Task 4 - Pilot Test Well

This task will include installation of two test wells to evaluate suitability of an alternative water supply. If possible, the location for the proposed test wells will be based on a review of preliminary site characterization data (site characterization will be conducted under a separate work order) and other information collected under Task 1 (Data Collection). We anticipate the preliminary data available for review will include: site access availability

(property ownership, etc.), contaminant distribution, groundwater flow direction, and hydrogeologic setting (including structural features and spatial distribution of water bearing units). If this information is not available in a timely fashion, EnviroSearch will proceed with the test well installation by maximizing use of available data.

Based on our review of preliminary information and discussions with area well drillers we anticipate the most promising water supply locations to be in the area of an east-west trending fault that is located directly northwest of the town of Nemo. We anticipate that water supply wells that penetrate a saturated portion of the fault zone would produce more water than existing wells. Once prospective sites have been identified, we anticipate installing both test wells to a depth of approximately 60 feet below ground surface using air rotary drilling techniques. The wells will consist of four-inch diameter PVC well casing with a screened interval of 20 feet. A limited aquifer test will be conducted to provide preliminary information on water quality and quantity. This test will consist of pumping each well for approximately four to six hours to evaluate production capacity. Water quality samples will be collected from the pump discharge at the end of each test for microbial analysis, total dissolved solids, and the pesticides Lindane and EDB.

Based on our preliminary review of water needs in the Nemo area a well producing 15 to 25 gallons per minute during periods of peak usage may be necessary. Depending on the results of the pilot test well program, the wells may be converted to production wells or used to site an additional production well.

Assumptions:

- USFS personnel will conduct all required negotiations to secure access to a suitable location for test well installation.
- Groundwater generated during the limited aquifer test will be discharged directly to the ground surface and will not require treatment or containment.

Task 5 - Water Supply Alternatives Analysis

An alternatives analysis will be conducted to evaluate available water supply options. This will include installation of an alternative water supply (including evaluation of existing water wells), treatment of existing supplies, trucking of potable water from an off-site source, or combination. The analysis will include an evaluation based on cost, treatment duration, maintenance requirements,

disposal costs, long term effectiveness, and public acceptance of the various alternatives.

Task 6 - Reporting

Following completion of Task 2 (Treatment Analysis) and Task 4 (Pilot Test Well Program) an interim report will be provided to the USFS for each task. These brief letter reports will provide a summary of the work conducted to date. Following completion of Task 5 (Alternative Water Supply Evaluation) a final report will be prepared. This final report will include a discussion of water supply alternatives for the Nemo area and an evaluation of advantages and disadvantages for each alternative identified. The final report will also include a recommendation for the preferred alternative, conceptual design, and a tentative schedule for implementation. Costs have been included for presentation of the report at a public meeting in Nemo.

Task 7 - Project Management

EnviroSearch will directly oversee all field activities conducted under this scope of work. This will include tracking of project costs/schedule, and communication with USFS representatives. Responsibilities will also include interaction with the State of South Dakota, Division of Environment and Natural Resources, Drinking Water Program (when necessary).

PROJECT PERSONNEL

The proposed Project Team will consist of personnel from EnviroSearch International and subcontractors from the Rapid City, South Dakota area. EnviroSearch personnel will consist of professionals with appropriate levels of engineering or geologic training and experience. EnviroSearch proposes to utilize Mr. Paul Hunter, P.G. as Project Manager to direct the investigation. Mr. Hunter has managed numerous groundwater investigations where potable water supplies were at risk. Mr. Richard Kelsey, P.E. has a wide range of experience with design and implementation of site characterization and remediation programs utilizing multidisciplinary teams of scientists and will provide oversight as Senior Engineer and Program Manager. Mr. Kelsey will act as a liaison between USFS and private parties interested in site activities. Christopher Lammer, P.E. is a chemical engineer with over nine years of experience dealing with design of remediation and potable water treatment systems and will oversee water treatment activities.

COST

We have provided a detailed estimate outlining anticipated costs to complete Task 1 through Task 7 as described in our proposed scope of work. The majority of work is proposed to be conducted by the Project Manager, Chemist/Staff Geologist, and Technician utilizing standard contract rates for professional services under Activity III; however, certain specialized activities will require utilization of professional scientists with experience in hydrogeologic investigations, and remedial engineering. EnviroSearch proposes to provide technical support for specific tasks with these professionals utilizing rates not previously established under the existing contract. The proposed personnel and rates along with total estimated costs to complete the tasks associated with this work order are presented in the attached spreadsheet.

SCHEDULE

Following authorization to proceed from the USFS, EnviroSearch can begin Tasks 1 and 2 immediately. These tasks will require approximately one week to complete. The on-site installation detailed in Task 3 can begin within seven days of authorization to proceed and will require approximately ten days to complete. Ideally, Task 4 will require completion of a portion of the site characterization (conducted under a separate work order) prior to initiation. Once sufficient site characterization information is available, the field portion of Task 4 will require approximately one week. Following completion of Task 4, Task 5 will be initiated with final recommendations provided within one week. We anticipate completion of the proposed scope of work within four to six weeks of authorization to proceed. If site characterization information is not available in a timely fashion, Task 4 may be completed based on available information.

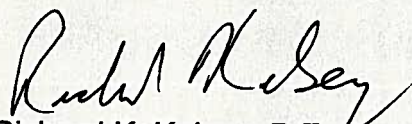
Assumptions used in developing the cost estimate and anticipated project schedule include the following:

- Winter weather will not significantly restrict equipment access and operation.
- All subsurface trenching can be completed before the ground freezes significantly.
- Subcontractors are available within the proposed time frame.
- USFS will accept delivery of equipment shipped under Task 3.

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We appreciate the opportunity to provide you with our best technical approach and cost estimate for this work order. If you have any questions, please feel free to contact me at (208) 345-8292.

Sincerely,



Richard K. Kelsey, P.E.
Senior Vice-President

RKK/dh
Enc.

cc: Bill Schleining, On-Site Coordinator

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Cost Estimate: USDA Forest Service Contract No. 63-84N8-6-005, Activity 3
Proposed Work Order No. 2: Nemo, SD Drinking Water Supply

LABOR	Task 1		Task 2		Task 3		Task 4		Task 5		Task 6		Task 7		Total	
	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost	Qty	Cost		
Senior Engineer	8	\$800.00	18	\$1,800.00	2	\$170.00	12	\$1,020.00	8	\$880.00	4	\$340.00	12	\$1,020.00	62	\$3,270.00
Chem Engineer	8	\$320.00	18	\$1,040.00	10	\$650.00	0	\$0.00	12	\$780.00	12	\$780.00	4	\$280.00	62	\$4,030.00
Project Manager	16	\$800.00	20	\$1,000.00	12	\$600.00	32	\$1,600.00	32	\$1,600.00	24	\$1,200.00	40	\$2,000.00	176	\$8,800.00
Engineer/Good/Chem	8	\$360.00	40	\$1,440.00	50	\$2,250.00	40	\$1,600.00	60	\$2,700.00	32	\$1,440.00	32	\$1,440.00	230	\$10,350.00
Technician		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	20	\$780.00
Heavy Equip Operator		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00
Truck Driver		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00
Cherical		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00
Laborer		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00	0	\$0.00
Cherical	16	\$448.00	8	\$324.00	8	\$224.00	8	\$324.00	10	\$360.00	12	\$336.00	2	\$56.00	64	\$1,792.00
Labor Subtotal		\$2,808.00		\$3,424.00		\$4,654.00		\$4,644.00		\$6,040.00		\$4,096.00		\$3,336.00		\$31,002.00
DIRECT COSTS																
Per Diem		\$65.00		\$0.00		\$390.00		\$325.00		\$0.00		\$0.00		\$0.00		\$715.00
Airfare		\$690.00		\$0.00		\$890.00		\$890.00		\$690.00		\$0.00		\$0.00		\$2,760.00
Vehicle		\$0.35		\$0.00		\$63.00		\$62.50		\$71.00		\$0.00		\$0.00		\$157.50
Lab Fees		\$137.54		\$0.00		\$275.07		\$350.14		\$0.00		\$0.00		\$0.00		\$425.21
Overnight Courier		\$0.00		\$0.00		\$23.00		\$23.00		\$0.00		\$0.00		\$0.00		\$46.00
Pump Equipment		\$0.00		\$0.00		\$0.00		\$300.00		\$0.00		\$0.00		\$0.00		\$300.00
Field Supplies		\$23.00		\$0.00		\$0.00		\$23.00		\$0.00		\$0.00		\$0.00		\$46.00
Personal Prot. Equip.		\$7,801.60		\$0.00		\$23.50		\$75.00		\$0.00		\$0.00		\$0.00		\$7,900.10
Carbon vessels		\$350.00		\$0.00		\$7,801.60		\$350.00		\$0.00		\$0.00		\$0.00		\$8,551.60
plumbing, valves, meter, etc		\$1,378.00		\$0.00		\$350.00		\$0.00		\$0.00		\$0.00		\$0.00		\$1,728.00
electrical hookup		\$500.00		\$0.00		\$1,378.00		\$0.00		\$0.00		\$0.00		\$0.00		\$1,878.00
heater (insulated)		\$1,000.00		\$0.00		\$1,000.00		\$0.00		\$0.00		\$0.00		\$0.00		\$2,000.00
6" concrete pad & prep		\$2,703.00		\$0.00		\$1,500.00		\$0.00		\$0.00		\$0.00		\$0.00		\$4,203.00
6" pipe building (insulated)		\$1,500.00		\$0.00		\$2,703.00		\$0.00		\$0.00		\$0.00		\$0.00		\$4,203.00
sewer vent riser		\$2,660.00		\$0.00		\$2,660.00		\$0.00		\$0.00		\$0.00		\$0.00		\$5,320.00
overhead to WSL		\$2,660.00		\$0.00		\$2,660.00		\$0.00		\$0.00		\$0.00		\$0.00		\$5,320.00
300N WSL w/ installation		\$50.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$0.00		\$50.00
Drilling subcontractor		\$0.15		\$0.00		\$7.50		\$7.50		\$0.00		\$0.00		\$0.00		\$15.00
Photocopies	200	\$30.00	200	\$30.00	50	\$7.50	50	\$7.50	100	\$15.00	400	\$80.00	100	\$30.00		\$120.00
Aerial Photography/Maps		\$100.00		\$80.00		\$20.00		\$20.00		\$20.00		\$20.00		\$20.00		\$80.00
Film & Processing		\$50.00		\$23.00		\$30.00		\$30.00		\$20.00		\$40.00		\$20.00		\$120.00
Telephone & fax		\$240.00		\$55.00		\$20,320.17		\$9,565.14		\$7,68.00		\$320.00		\$734.00		\$30,960.31
Other		\$3,048.00		\$5,478.00		\$24,974.17		\$13,209.14		\$8,789.00		\$4,418.00		\$4,070.00		\$81,982.31
Direct Costs Subtotal		\$3,048.00		\$5,478.00		\$24,974.17		\$13,209.14		\$8,789.00		\$4,418.00		\$4,070.00		\$81,982.31