Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221
30 OCT 2002

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Mr. Clint Marshall
Ground Water Quality Bureau
State of New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM 87505

Subject: Notice of Intent, Waste Isolation Pilot Plant, Carlsbad, New Mexico

Dear Mr. Marshall:

In accordance with our meeting on October 4th, find enclosed two copies of a Notice of Intent (NOI) with the information we discussed. This NOI is being submitted to update the information included in the Waste Isolation Pilot Plant's (WIPP's) April 1983 NOI that covered the Salt Pile and Salt Pile Evaporation Pond.

The enclosed NOI describes a lens of shallow subsurface water existing under the WIPP surface facilities and provides a brief description of the current understanding of the shallow geology at the site. Enclosed to the NOI are copies of various reports produced from 1997 to 2002 that describe the hydrogeological conditions of the shallow subsurface at WIPP. The NOI also describes several activities that WIPP proposes to undertake to control infiltration of water, and to investigate the lens of shallow subsurface water.

As described in the enclosed NOI, WIPP proposes to do the following:

- Modify Salt Pile operations and cover the pile to improve drainage to the Salt Pile Evaporation Pond and minimize water infiltration through the pile;
- Line the Salt Pile Evaporation Pond and Salt Pile run-off ditches with a synthetic liner system;
- Pursue options for alternative management of salt;
- Perform a water budget study; and,
- Determine the rate, extent, and fate of the lens of shallow subsurface water;

If you have any questions regarding the enclosed NOI, please contact me at (505) 234-7349.

Sincerely,

Harold Johnson

Harold Johnson
NEPA Compliance Officer

Enclosure – Entire document in 3" binder

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CBFO:ORC:CAZ:VW:02-1317:UFC:5486

cc:
P. Ritzma, NMED
W. Fetner, NMED
D. Bignell, WTS
CBFO M&RC

CBFO:ORC:CAZ:VW:02-1317:UFC:5486

Notice of Intent

Waste Isolation Pilot Plant
Carlsbad, New Mexico

October 30, 2002

Notice of Intent
Waste Isolation Pilot Plant, Carlsbad, New Mexico

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1.0 Introduction

This Notice of Intent (NOI) is being submitted to the Ground Water Quality Bureau (GWCB) of the New Mexico Environment Department (NMED) in accordance with 20 NMAC 6.2.1201(A).

In April 1983, the Waste Isolation Pilot Plant (WIPP) submitted a NOI to the New Mexico Environmental Improvement Division (EID) covering a variety of activities, including operation of a Salt Pile (SP) and associated Salt Pile Evaporation Pond (SPEP) (Department of Energy, 1983, see Attachment 1). On May 16, 1983, the EID determined that a Discharge Plan was not needed for the activities described in WIPP's April 1983 NOI and wrote "*...If at sometime in the future...observation and monitoring indicate the situation is not as described, you should notify this office...*"(Rhoades, 1983, see Attachment 1). This NOI is being submitted because observation and monitoring indicate that the situation is now different from that described in the April 1983 NOI.

Since submission of the April 1983 NOI, the WIPP has learned new information regarding the shallow hydrogeological characteristics of the WIPP site, and new information regarding the operation of the SP and SPEP. This NOI generally sets forth what is now known about the SP and SPEP, and describes a lens of shallow subsurface water (SSW) existing under the WIPP surface facilities.

The remainder of this NOI contains the following elements:

- Summary of NOIs and related correspondence associated with the SP and SPEP,
- Description of the SP and SPEP,
- An overview of the shallow hydrogeology of the WIPP site,
- Proposed source control activities (including preliminary liner system design for the SPEP, and SP run-off ditches, and related SP activities),
- A proposed Site Investigation Work Plan, and
- A schedule.

2.0 Summary of NOIs and Related Correspondence

Key NOIs and related correspondence regarding the SP and SPEP are as follows (copies of these NOIs and correspondence are included in Attachment 1):

April 1983 – WIPP submitted a NOI to the EID of the State of New Mexico for the "Construction Phase" of WIPP. This NOI covered: 1) the SP and associated SPEP, 2) temporary discharge of water used to clean the water supply pipeline to WIPP, 3) two temporary septic tanks and a leach field for sanitary waste, and 4) 26,000 gallons of brine-based drilling fluid for boring the pilot hole for the Exhaust Shaft. This NOI described the shallow hydrogeology of the WIPP site as it was known at the time.

May 16, 1983 - In response to WIPP's April 1983 NOI, the EID determined that no discharge plan was required for the SP or SPEP.

August 28, 1985 – WIPP sent a NOI to EID to discharge a total of 250,000 gallons of brine water from the final stages of construction of the Waste Shaft to the SPEP.

December 29, 1987 – WIPP sent a NOI to EID to discharge 2,000 to 8,000 gallons of drill cuttings and brine solution from construction of the Air Intake Shaft (described in the NOI as the "air ventilation shaft") to the SPEP.

August 22, 1991 – WIPP sent a NOI to the NMED to discharge 1,500 gallons per day of brine waters from mine de-watering to the SPEP.

November 14, 1991 – WIPP sent a Discharge Plan Application to NMED for expansion of the existing lined sewage lagoon system, and continued temporary discharge of brine waters from mine de-watering to the SPEP.

January 16, 1992 - NMED approved WIPP's November 14, 1991 Discharge Plan Application, including continued temporary discharge of brine waters to the SPEP pending construction of an expansion to the sewage lagoon system. NMED issued Discharge Plan DP-831.

September 16, 1993 - NMED granted a 60-day extension for continued temporary discharge of brine water to the SPEP pending final construction of the sewage lagoon expansion.

3.0 Description of the Salt Pile and Salt Pile Evaporation Pond

The SP and SPEP were constructed in 1984. The general configuration of the SP and SPEP are described in the April 1983 NOI (Attachment 1) and in as-built drawings (Attachment 2). The SP is approximately 15 acres and the SPEP is approximately 3 acres (see Figure 2). The SP continues to receive mined materials from the WIPP underground. Photo 1 below shows the SP and SPEP.

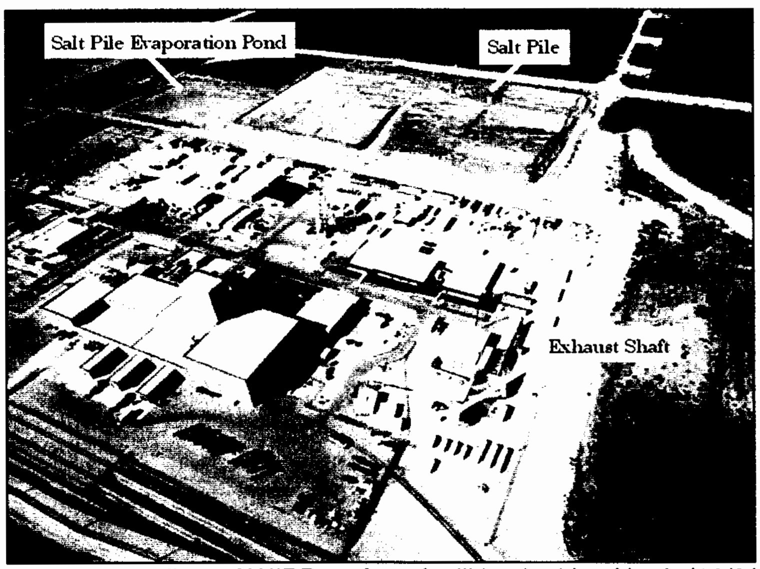

Photo 1 - Aerial View of WIPP surface facilities looking North (10/3/98).

3.1 Current Conditions of the Salt Pile and Salt Pile Evaporation Pond

The SP currently holds over 900,000 tons of salt mined from the WIPP. Salt is placed in lifts that are approximately 25 feet thick, and the pile footprint has from 20 to 50 vertical feet of salt in place. Side slopes vary slightly but are near 1.5 horizontal to 1 vertical. An access ramp having a slope of 10 percent extends into and divides the pile into two sections (east and west) that are approximately equal in area. Mine safety regulations require that a small berm (about 3 to 4 feet in height) be maintained at the top of the SP to prevent trucks from backing over the edge of the pile during unloading, and there are about 13 acres within the berm.

The SPEP receives run-off from a watershed that includes areas in addition to those in the original design calculations (349,920 cubic feet design requirement, see April 1983 NOI in Attachment 1). The run-off entering the SPEP consists of storm water from portions of the plant site and parking lot and run-off generated from the SP side slopes (approximately 4 acres of surface area) and access ramp. Also, a portion of the plant site run-off is diverted from the south through culverts that feed into the SPEP rather than being directed off-site. The 13 acres within the SP berm do not normally drain to the evaporation pond, and most precipitation either infiltrates or evaporates from the SP surface.

The SPEP capacity is approximately twice the design volume because the actual berm height is 7 feet compared to 3 feet in the original design. Ditches designed to divert storm water from a small area north of the SPEP are not operating at full capacity. There is also minor side slope erosion on the SP and within the run-off ditches, and some accumulation of sediment in the SPEP. However, the erosion, accumulation of sediment, and additional run-off into the SPEP are offset by the over-sized capacity of the SPEP.

Infiltration of water into the SP and SPEP will vary, depending on the intensity of rain and the condition of the ground surface. Actual infiltration on the SP surface depends on rainfall intensity and duration, the age of the salt, the condition of the surface as a result of prior rains, and atmospheric conditions. Field observations indicate that a portion of direct rainfall will penetrate the SP surface, and that subsequent evaporation will be minimal.

Storm water samples collected from the SPEP and SP run-off ditches (these ditches have also been referred to as the SP "moat") in 1997 showed total dissolved solids (TDS) concentrations of 2,630 mg/L and 9,320 mg/L, respectively (see report at Attachment 4).

4.0 Shallow Hydrogeology at the WIPP Site

4.1 Introduction

Shallow subsurface water occurs beneath the WIPP site at a depth of less than 100 feet below ground surface (bgs) at the contact between the lower Santa Rosa Formation and the upper Dewey Lake Formation. This SSW yields generally less than 1 gallon per minute in monitoring wells and piezometers and contains high concentrations of TDS and chlorides. The origin of this water is believed to be primarily from anthropogenic causes, with some contribution from natural sources. The SSW occurs not only under the WIPP site surface facilities but also to the south as indicated by the recent encounter in drillhole C-2737 about a half mile south of the Waste Shaft (Powers, 2002a, see Attachment 8). Figure 1 is a map of the WIPP site showing the location of this drillhole (which was completed as Well C-2737).

Well C-2737 monitors units of the deeper Rustler Formation, and was drilled to replace monitoring Well H-1, which has been plugged and abandoned. Well H-1 monitored water levels within the Culebra and Magenta Dolomite Members of the Rustler Formation. Well H-1, originally drilled and completed in 1978, was replaced because its steel casing was deteriorating and the water level data it was providing on the Magenta Member were suspect. During the drilling of Well C-2737, SSW was encountered approximately 60 feet bgs in the upper portion of the Dewey Lake Formation where no water was anticipated. It is now believed that the shallow water encountered during drilling of C-2737 is associated with the SSW observed under the WIPP surface facilities.

After the SSW was encountered during drilling of C-2737, a separate well, C-2811, was drilled on the same pad as C-2737. Well C-2811 was completed to monitor SSW water levels and water quality (Powers, 2002b, see Attachment 9). Samples of water taken in December, 2001 from Well C-2811 show TDS concentrations of 2,630 mg/L.

As a result of encountering the SSW in wells C-2737 and C-2811, WIPP undertook a comprehensive review of data and hydrogeological reports to evaluate the potential for the SSW to commingle with natural shallow groundwater to the south of the WIPP surface facilities. Natural shallow groundwater occurs in the middle part of the Dewey Lake Formation at the southern portion of the WIPP site and to the south of the WIPP site (see Section 4.4.2 below).

4.2 Early Studies of Shallow Hydrogeology at WIPP

Early descriptions of the shallow subsurface geology at WIPP were made by various investigators (Lambert and Mercer, 1977; Mercer and Orr, 1979; Mercer, 1983; and Powers, et al, 1978), and were cited in the NOIs submitted to the EID in the 1980s. Pre-construction activities at the site (Sergent, Hauskins, and Beckwith, 1979) and mapping of the Exhaust Shaft (Holt and Powers, 1986) also showed that no zone of saturation existed in the lower Santa Rosa Formation or the upper Dewey Lake Formation prior to WIPP facility development.

During pre-construction activities Sergent, Hauskins and Beckwith (1979) conducted falling head tests on three drillholes penetrating the Santa Rosa Formation in the vicinity of the current WIPP surface facilities. The Santa Rosa Formation overlies the Dewey Lake Formation, and, at the center of the WIPP site, consists of a sandstone layer approximately two feet thick (see Figure 3). Hydraulic conductivity values ranged from 2.82×10^{-6} to 3.53×10^{-7} m/s.

4.3 Exhaust Shaft Hydraulic Assessments

In May 1995, a video inspection of the Exhaust Shaft at WIPP indicated that SSW was seeping into the shaft at about 50 to 80 feet bgs (see Attachment 3). At the time, the water seeping into the Exhaust Shaft was clogging air monitoring filters at the top of the shaft.

After 1995, a series of hydraulic assessments was undertaken to identify the source and nature of the SSW in the vicinity of the Exhaust Shaft. These assessments were the subject of interactions between WIPP mine engineering and environmental staff and the NMED DOE Oversight Bureau, NMED Hazardous Waste Bureau, and the Environmental Evaluation Group (EEG). The results of these assessments were set forth in a series of reports between 1997 and 2001 - the reports are attached to this NOI (see Attachments 3 through 9). Some of the hydraulic assessment reports were also the subject of testimony during the Hazardous Waste Permit hearings for WIPP in early 1999.

Three wells, C-2505, C-2506, and C-2507 (see Figure 2) were drilled and completed with 4-inch (i.d.) PVC pipe and their screened intervals ranged from 20 to 24.73 feet (Intera, 1997, see Attachment 3). The sand packs were covered with three feet of bentonite seal, and the annuli were filled with cement to the surface. The surface completions included concrete pads and locked wellheads.

Twelve wells completed as piezometers, PZ-1 through PZ-12 (see Figure 2), were hollow-stem augered/cored and/or air-rotary drilled to depths up to 82 feet bgs (Duke Engineering & Services, 1997, see Attachment 4). Each has 2-inch (i.d.) PVC pipe, with screened intervals ranging from 20 feet for most piezometers to a maximum of 40 feet; all have sand packs behind the screens. The bentonite seals over the sand packs range from 2 to 6 feet thick, and the annuli were cemented to the surface. Each piezometer has a surface pad, protective posts, and a padlocked cover.

Well C-2811 was drilled to a depth of 80.5 feet and was completed with 2-inch (i.d.) PVC pipe (Powers, 2002b, see Attachment 9). The screened interval is 20 feet, with a sand pack in the annulus. The sand pack is covered with 35 feet of bentonite seal, and the annulus to the surface was filled with cement. The surface configuration includes a cement pad and padlocked steel wellhead.

4.4 Current Understanding of Shallow Subsurface Water at WIPP

As described above, and in Attachments 3 through 9, SSW has been encountered in seventeen drillholes and is being monitored in sixteen (see Section 4.4.1, below). These encounters have provided information about the stratigraphic setting of the SSW and its basic characteristics.

Data from the WIPP site and vicinity show that formations below the site are consistent with the general regional trend of formational dips to the east and locally northeast (see Figures 3 and 4). Geologic data from shafts, deep drillholes, pre-construction geotechnical investigations, and shallow drillholes close to the center of the WIPP site show (e.g., Duke Engineering and Services, 1997, see Attachment 4):

- The Santa Rosa Formation contact on the Dewey Lake Formation may be locally erosional,
- The near-surface Santa Rosa Formation was thinned by erosion before the Miocene-Pleistocene Gatuña Formation was deposited,
- The Santa Rosa Formation pinches out to the west (erosionally) near the center of the WIPP site, and
- The Dewey Lake Formation west of the edge of the Santa Rosa Formation was weathered and eroded before the Gatuña Formation was deposited.

The SSW saturated zone occurs in the uppermost Permo-Triassic Dewey Lake Formation and basal Triassic Santa Rosa Formation (see Figures 3 and 4) (Duke Engineering & Services, 1997, see Attachment 4). Some wells in the PZ series produced dry cuttings in the uppermost Dewey Lake Formation, indicating that saturation was limited to the Santa Rosa/Dewey Lake formational contact. The lower limit of saturation in Well C-2811 extends deeper than in previous SSW piezometers and wells - about 15 feet below the formational contact.

Hydraulic parameters have been determined for the SSW interval in fifteen wells and piezometers completed within the SSW (see Attachments 3, 4, and 6). Testing (i.e., single well tests) of the PZ series piezometers and wells C-2505, C-2506, and C-2507 showed hydraulic conductivities of the SSW interval ranging from 2.11×10^{-5} to 2.64×10^{-8} m/s from pumping tests. Estimated saturated thicknesses in these piezometers and wells range from about 5 to 34 feet.

Water levels in the SSW are measured monthly. Water levels are highest in the piezometers nearest the SPEP, and they are lowest in piezometers on the south side of the WIPP fenced area (see Attachments 5 and 7). The data indicate SSW flows radially away from the high water levels around the SPEP and SP. The concentration and distribution of solutes, and location of the SSW, suggest that both the SP and associated SPEP are contributing to the SSW.

Water quality samples are collected annually, and they show that TDS concentrations are highest in the northernmost PZ- series wells and lowest in the southern wells (see Attachments 5 and 7, and Section 4.4.1 below).

4.4.1 Most Recent Water Level and Water Quality Data

Water quality varies greatly in the sampled piezometers (see Table 1 attached to this NOI for a summary of water quality data for samples collected in December 2001). The most recent round of water-quality sampling data (December 2001) provides a maximum TDS concentration of 134,000 mg/L, in well PZ-9 east of the SP. The minimum measured TDS concentration is 2,320 mg/L at PZ-10 located adjacent to the storm water retention basin in the southwest portion of the site. Well C-2811, the most distant shallow well from the SP and SPEP, has a TDS concentration of 2,630 mg/L. Sodium and chloride are the major cation and anion constituents in most samples.

Analytical laboratory results for nitrate (NO_3) range from 4 to 30 mg/L in the December 2001 sampling round (see Table 1). The equivalent values for nitrate reported as nitrogen (NO_3 as N) range from 1 to 7 mg/L. Other data from the December 2001 sampling round include: chloride ranging from 468 to 72,400 mg/L; sulfate ranging from 379 to 3,470 mg/L; selenium ranging from 0.0243 mg/L to 0.112 mg/L; and chromium ranging from 0.00083 to 0.0535 mg/L.

4.4.2 Natural Shallow Groundwater at Well WQSP-6A and Off-Site Wells

Well WQSP-6A is located approximately 3,860 lateral feet to the southwest of Well C-2811 (see Figure 1). WQSP-6A was installed in 1995 and it monitors natural groundwater in the Dewey Lake Formation. The piezometric head in Well WQSP-6A is approximately 3,198 ft above mean sea level (amsl) compared to about 3,337 ft amsl at Well C-2811 - a difference of 139 vertical feet. The TDS concentration in the water at Well WQSP-6A has remained stable at around 4,000 mg/L since the well was installed (see historical data for Well WQSP-6A at Table 2).

The water wells nearest the WIPP site that are using the natural shallow groundwater from the middle Dewey Lake Formation are the Barn Well and Ranch Well located on the J.C. Mills Ranch (see Figure 1). These wells are located approximately three miles south-southwest of the WIPP surface facilities, and about 1.75 miles south of Well WQSP-6A (see Figure 1). TDS concentrations in the Barn Well have ranged from 630 to 720 mg/L, and TDS concentrations in the Ranch Well have ranged from 2,800 to 3,300 mg/L (DOE, 1996).

4.4.3 Conceptual Model of Shallow Subsurface Water

In consideration of the information available, the working conceptual model for the SSW is as follows (this conceptual model is shown on the geologic cross-section on Figure 4):

> Past and present-day natural and anthropogenic sources of water have contributed to the formation of a lens of shallow subsurface water immediately beneath the WIPP site that did not exist prior to construction of the WIPP facilities. The SSW is moving from high head potential beneath the SP and adjacent SPEP. The full extent of the SSW is unknown at this time, but the direction of flow is assumed to be primarily radially away from the SP and SPEP. Some component of flow is toward the naturally occurring shallow groundwater in the Dewey Lake Formation, at greater depth in the vicinity of Well WQSP-6A. All present-day contributing sources to the SSW are not definitively known at this time, but reasonably certain sources include the SP, the adjacent unlined SPEP, and the unlined on-site storm water retention ponds around the south and southwest part of the fenced WIPP site area.

With this NOI, WIPP is proposing to perform site investigation activities to refine this conceptual model (see Section 6.0 below and Attachment 11).

5.0 Proposed Source Control Activities

This Section describes activities that WIPP proposes to undertake to control water infiltration into the SP and percolation out of the SPEP, and to evaluate other potential sources of recharge to the SSW.

5.1 General

Based on the current understanding of shallow subsurface conditions, efforts are focused on controlling contribution of water and solutes to the SSW. An additional focus is on assessing the potential, if any, for the SSW to reach and commingle with natural groundwater in the middle Dewey Lake Formation in the southern portion of the WIPP site - for example, in the vicinity of Well WQSP-6A. The available data are insufficient to evaluate the magnitude of water that the SP and SPEP may be contributing to the lens of SSW under the WIPP surface facilities. However, the high piezometric head near the SPEP, and the high TDS and chlorides near the SP suggest that there is contribution from these sources. The magnitude of water and solute contribution from these sources depends on the size and duration of rainfall events and the properties of the underlying natural caliche layer, which has been disturbed in the vicinity of the WIPP surface facilities and shafts. During small events where little run-off occurs from the SP, infiltration and evapotranspiration will occur in the SP run-off ditch bottoms and surrounding land surfaces, rather than generating flow to the SPEP.

A phased approach is planned to first limit, then significantly reduce infiltration of water and solute contribution to the SSW. This phased approach, described in the following sections, involves operational modifications to the SP, lining the SPEP and SP run-off ditches, covering the SP, and investigating options for alternative management of salt.

5.2 Modifications to Salt Pile Operations

Operation of the SP will be altered in order to limit infiltration. By re-shaping the SP through placement and grading of salt, run-off from the SP can be maintained to the SPEP as described in the April 1983 NOI. This is considered an interim step that can be rapidly implemented while more long-term actions are pursued to eliminate infiltration (see Sections 5.3, 5.4, and 5.5 below).

5.3 Lining the Salt Pile Evaporation Pond and Salt Pile Run-off Ditches

The preliminary design for lining of the SPEP and the SP run-off ditches is presented in Attachment 10 to this NOI for the GWQB's review and consideration. The design includes a Layout Plan, Sections, and Design Details for the SPEP and SP run-off ditches. Calculations are complete and the SPEP is sized to accommodate evaporation of the average annual rainfall on the SP, SPEP and SP run-off ditch surfaces. Storm flow capacity is maintained by allowing a SPEP storage capacity of twice the 100-year 6-hour rainfall event. Ditches will convey the 100-year 6-hour run-off while maintaining a minimum 1-foot freeboard.

Liner alternatives evaluated included emulsified asphalt, high density polyethylene (HDPE), and polyvinyl chloride (PVC) - all impervious synthetic materials. From a performance aspect, all three alternatives provide the low permeability needed and meet longevity and compatibility requirements. Emulsified asphalt is proposed for use because HDPE and PVC require complicated anchor trenches between the SP run-off ditches and the SP and emulsified asphalt does not. By using emulsified asphalt, complicated boots at culverts are also eliminated, thus reducing the potential for leaks. No additional ballast is required to anchor emulsified asphalt liners from wind uplift, as is the case with HDPE or PVC.

5.4 Covering the Salt Pile

WIPP proposes to cover the SP to significantly reduce infiltration of water and limit contribution of solute to the shallow subsurface. The SP cover system must be carefully designed and executed so it does not impact the ability of WIPP to fulfill its mission by interrupting salt placement and storage operations. Also, the SP cover system must accommodate possible alternative salt management options (see Section 5.5 below) as well as the long-term aspects of completion of WIPP operations and site closure.

WIPP proposes to submit to the GWQB for review and consideration a preliminary design for the SP cover system when that design is completed. The design for the SP cover system will be integrated with the final design of the SPEP and SP run-off ditch liner system. The SP cover design will also be integrated with the outcome of the investigations regarding alternative salt management options described in Section 5.5 below.

5.5 Alternative Management of Salt

WIPP is investigating its options for alternative management of salt under the Land Withdrawal Act. Pollution prevention (reducing the size of the SP) options would include using, distributing, transferring, recycling or selling salt to federal, state, and local governments for use in public works programs for road deicing. Initial inquiries about use of the salt for road deicing resulted in over 40 agencies expressing an interest.

6.0 Site Investigation Work Plan

This section briefly describes site investigation activities that WIPP proposes to undertake to gather the needed information regarding the SSW under the WIPP surface facilities (see summary of needed information at Section 6.1 below). A Site Investigation Work Plan that describes these activities in more detail is attached to this NOI for the GWQB's review and consideration (see Attachment 11).

These site investigation activities will include: continued monitoring of the existing shallow well/piezometer network; a water budget analysis leveraging existing data; geophysical investigation with confirmatory drillholes; and refinements to the Conceptual Model of the SSW.

6.1 Needed Information

The SSW has been studied, and a Conceptual Model for the SSW has been developed (see Section 4.4.3 above). Additional needed information falls into four general categories:

- Determination of past and present source contributions,
- Volume and degree of saturation for the lens of SSW,
- Aerial extent and rate of movement of the lens of SSW, and
- Ultimate fate of the lens of SSW

A Site Investigation Work Plan is proposed in this NOI to gather the needed additional information (see Attachment 11).

6.2 Continued Monitoring of Existing Shallow Network

The SSW is monitored via water level measurements and water quality samples from sixteen wells drilled within or near the WIPP fenced area (see Figure 2, Table 1, and Section 4.3 above). These monitoring activities will be continued until such time as the results from the Site Investigation Work Plan activities suggest that the monitoring be adjusted.

6.3 Water Budget Analysis

A water budget study is planned to examine all possible sources of water contribution to the lens of SSW under the WIPP surface facilities. This will be performed through an inventory and analysis of information available on potential infiltration sources, both past and present. In addition to the SP and SPEP, there are other possible sources of water infiltration, including storm water retention ponds and storm water channels. Past discharges of both fresh and saline waters (e.g., brine waters associated with shaft drilling and construction) may have been contributors to the SSW currently observed. The water budget will evaluate the relative contributions of various infiltration sources to determine the significance of the SP and SPEP on the shallow hydrogeological system, and the possible effects of SP and SPEP source controls.

6.4 Geophysical Investigation

Geophysical techniques will be used to map the extent of the SSW (see Attachment 11). The primary objective will be to differentiate between areas underlain by a shallow saturated zone from those where the shallow subsurface is not saturated. Electromagnetic (frequency domain or time domain) techniques or electrical resistivity are proposed for mapping the limits of the SSW and providing control for locating drillholes. Confirmatory drillholes will be located on the basis of the outcome of the water budget analysis and the geophysical investigation.

6.5 Refinements to Conceptual Model of Shallow Subsurface Water

After completion of the water budget analysis and geophysical investigation, refinements to the Conceptual Model of the SSW will be made. These refinements will form the basis for decision-making regarding resolution of the SSW issue.

7.0 Schedule

At this time, WIPP is prepared to move forward with the various activities proposed in Sections 5 and 6, and Attachments 10 and 11 upon notification by the GWQB indicating concurrence. WIPP is prepared to incorporate any comments, requirements and/or review or approval procedures that the GWQB believes are appropriate. As noted in Attachment 11, the water budget was initiated on October 28, 2002.

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