Yvonne
Southeast
Drain.
Archeological

Department of Energy
Oak Ridge Operations
Weldon Spring Site
Remedial Action Project Office
7295 Highway 94 South
St. Charles, Missouri 63304

August 25, 1997

Ms. Clair Blackwell
Department of Natural Resources
State Historic Preservation Officer
P.O. Box 176
Jefferson City, MO 65102

Dear Ms. Blackwell:

CULTURAL RESOURCE DETERMINATION FOR THE NON-CHANNEL AREA OF THE SOUTHEAST DRAINAGE - A PART OF THE WELDON SPRING SITE REMEDIAL ACTION PROJECT (WSSRAP) ST. CHARLES, MISSOURI

Reference: Letter from U.S. DOE to Ms. Judy Deel, Missouri DNR, Cultural Resources Evaluations of the Weldon Spring Site Remedial Action Project (WSSRAP) Southeast Drainage, dated February 24, 1997.

Letter from Missouri DNR to Mr. Jerry Van Fossen, Weldon Spring Site Remedial Action Project Southeast Drainage (DOE) St. Charles, County, Missouri, dated March 17, 1997.

The U.S. DOE-Weldon Spring submits a "No Effect" determination for the CERCLA remediation of all contaminated areas in and adjacent to the Southeast Drainage in accordance with 36 CFR 800.5.

In 1990, a Phase I survey of the Southeast Drainage channel was conducted by Dr. Walters and provided to your office. In April 1997, an expanded Phase I survey was completed for the entire area of potential effect (APE). A copy of that report is hereby provided for your records.

As in the past, the radiologically contaminated areas were not surveyed due to potential health risks to the workers.

If we do not receive written objection to our determination of no effect within 15 calendar days of receipt of this letter, we will presume concurrence and proceed with the undertaking, subject to the provisions of 36 CFR 800.22, for treating historic properties discovered during implementation of an undertaking. If you have any questions or comments, please contact Karen Reed, DOE, at (314) 441-8978 or Yvonne Deyo, PAI, at (314) 926-7034.

Sincerely,

Tom Pauling
Acting Deputy Project Manager
Weldon Spring Site
Remedial Action Project

Enclosure
As stated

cc w/o enclosure:
Walter Anderson, PMC
Mary Picel, ANL

A Phase I Archaeological Survey of the Southeast Drainage for the Weldon Spring Site Remedial Action Project, St. Charles County, Missouri

Prepared for
U.S. Department of Energy

by
Argonne National Laboratory
Argonne, Illinois

K.L. Wescott, Principal Investigator

August 1997

CONTENTS

1 Abstract

Planned cleanup activities within the Southeast Drainage of the Weldon Spring Site Remedial Action Project, St. Charles County, Missouri, involve the removal of radioactively contaminated sediment along the drainage and minor modifications to the stream channel to provide access to those areas. A Phase I archaeological survey was conducted in April 1997 on portions of the Southeast Drainage to assess whether significant cultural resources could be impacted. The survey consisted of a pedestrian reconnaissance employing systematic troweling of leaf litter to improve surface visibility. Results of the investigation indicate that the planned action, as shown in the attached drawings in Appendix A, will not adversely impact cultural resources. It is recommended, however, that four areas potentially eligible for listing on the *National Register of Historic Places* near planned remedial action areas be avoided. Should it become necessary to encroach on these areas, Phase II testing would be required to evaluate further whether the locations meet National Register eligibility requirements.

2 Background

On April 21-24, 1997, the U.S. Department of Energy (DOE), with assistance of the PMC and Argonne National Laboratory (ANL), conducted a Phase I archaeological survey of areas involving remedial action activities within the Southeast Drainage of the Weldon Spring Site in St. Charles County, Missouri. The survey was completed to identify whether any significant cultural resources could be impacted by the planned action, as required under Section 106 of the National Historic Preservation Act of 1966, as amended.

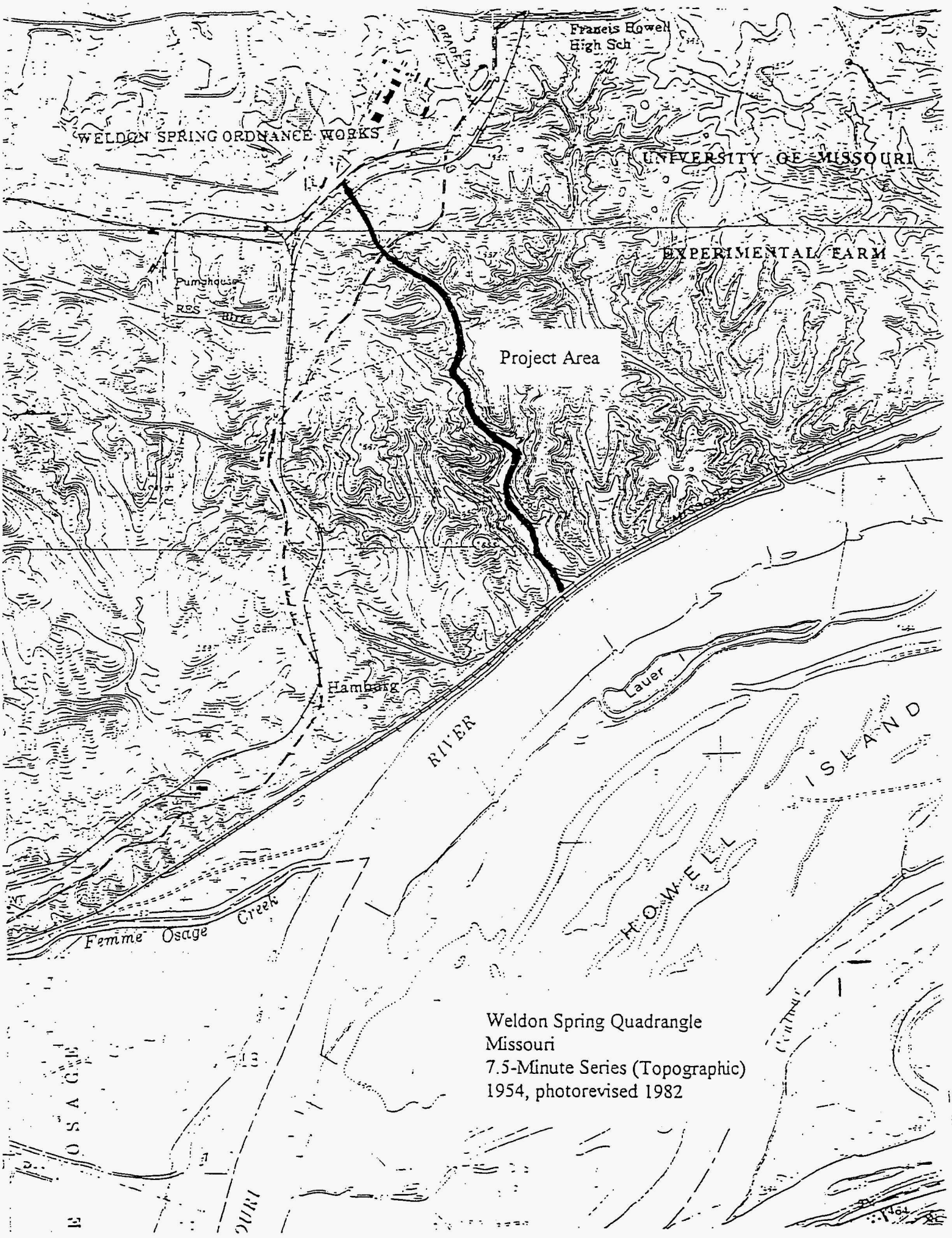
Within the Southeast Drainage is a first-order intermittent stream located in a steep-sided valley cut into limestone bluffs. The stream runs in a south-southeasterly direction from just northwest of Highway 94 near the Weldon Spring chemical plant to the Missouri River. The elevation of the stream channel gradually drops from approximately 183 to 137 m above mean sea level as the stream approaches the Missouri River. Four springs and a sinkhole have been identified within the drainage (Missouri Department of Natural Resources 1991). The Southeast Drainage was historically used by the Army and the U.S. Atomic Energy Commission (predecessor of DOE) for discharging wastewater to the Missouri River. Effluents were discharged from the Weldon Spring Ordnance Works wastewater treatment plants, the chemical plant, and the sanitary treatment plant at the DOE project office building. As a result of these past operations, surface water and sediment in many areas of the drainage are radioactively and chemically contaminated. Evaluation presented in the engineering evaluation/cost analysis (ANL 1996) indicated that potential human health risk is primarily from radioactive contamination. Therefore, the decision for cleanup of the drainage is based on removal of radioactively contaminated sediment.

The Southeast Drainage is part of the Missouri River watershed (East Missouri Study Unit) located in the Dissected Till Plains, a subdivision of the Central Lowlands Plateau Physiographic Province. More specifically, it is located in Township 45N, Range 3E, in Sections 5 and 6 and part of a Land Grant projected to be in Section 8 (USGS 1954, photorevised 1982) (Figure 1). The entire Southeast Drainage basin comprises an area of approximately 106 hectares. The sedimentary context within the basin consists primarily of silty clays and clayey silts. Nearer the headwaters, the channel is located in a steep and narrow valley with a rocky surface and little sediment, but sedimentary deposits increase as the valley floor flattens and broadens as the stream approaches the Missouri River (ANL 1996). Soils adjacent to the stream channel are predominantly Goss cherty silt loam and, nearer the Missouri River confluence, Hodge loamy fine sand (Tummons 1982).

The Southeast Drainage basin consists of a mature hardwood forest community, with common tree species including oak, maple, hickory, and sycamore. The available habitat is suitable for a variety of wildlife including amphibians, reptiles, birds, and mammals. The intermittent nature of the stream is not suitable for waterfowl, and the limited fish fauna that occurs in the drainage are restricted to the few permanent spring-fed pools and to the lowermost portion of the drainage near its confluence with the Missouri River (ANL 1996).

An overview of the culture history of the East Missouri Study Unit, as proposed by Chapman (1975, 1980) and supplemented by Weston and Weichman (1987), is provided in earlier cultural resource reports for the Weldon Spring Site by Dr. Gary Rex Walters of Triad Research Services (1988, 1989, 1990c, 1992), and will not be addressed here. Paleo-Indian, Archaic, Woodland, and Mississippian period sites have been encountered within the boundaries of the study unit. The temporal affiliation of many of the sites previously recorded at the Weldon Spring Site by Walters is currently unknown, although some Archaic, Woodland, and Late Woodland/Mississippian period sites have been identified (Walters 1988, 1989, 1990c, 1992).

A review of previous cultural resource investigations in the Southeast Drainage was conducted by Walters on July 3, 1990. He reported the area had never been surveyed for cultural resources, and no archaeological material had been previously recorded (Walters 1990a). The principal intermittent stream channel flowing through the Southeast Drainage was subsequently surveyed by Walters and ANL on July 11, 1990. Despite excellent visibility within the channel, only one isolated artifact, a Late Archaic period projectile point redeposited by water transport, was recorded during that survey (Walters 1990a). One historic period site is located near the confluence of the drainage with the Missouri River (Walters 1990b). Structures from this farmstead location were demolished by the U.S. Army when they acquired the property in the 1940s. Neither the isolated projectile point nor the historic site appear likely to meet the eligibility criteria for listing on the *National Register of Historic Places*. No additional cultural resource investigations have taken place within the Southeast Drainage until the present survey.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Missouri
7.5-Minute Series (Topographic)
1954, photorevised 1982

3 Archaeological Field Survey

3.1 Purpose

Planned cleanup activities for the drainage will involve the removal of selected radioactively contaminated sediment in accessible areas of the drainage. Cleanup is scheduled to begin the winter of 1997-98. The existing channel with some minor modifications will be used as the access route for removing the contaminated sediment. The purpose of the Phase I archaeological survey was to locate archaeological sites within buffer areas around contaminated sites, along previously non-surveyed areas of the access route, and in designated turnout areas. Only those sites that would be impacted by remediation activities would be tested further to evaluate their potential to meet the eligibility requirements for listing on the *National Register of Historic Places*. Any other sites recorded during the survey would be avoided during the cleanup. Health risk was a consideration for the waiver of survey requirements for specific radioactively contaminated areas within the Weldon Spring Ordnance Works by the Missouri Department of Natural Resources, Office of Historic Preservation (MDNR-SHPO) (Weichman 1986).

3.2 Field Conditions

The ground surface visibility was extremely poor in many areas. Although the understory was not very developed beneath the hardwood forest canopy, heavy leaf litter made conditions for a surface survey difficult (see Survey Methodology). Once the leaf litter was removed surface visibility improved to better than 80% on average. The terrain was rather rugged at times, and obstacles, such as large fallen trees, required variations to an otherwise systematic survey transect interval. The areas within the drainage were primarily undisturbed by humans with the exception of the extreme north end (north of Highway 94) and the extreme south end where the drainage meets the publicly accessible Katy Trail and the Missouri River. Additional areas of human disturbance include a transmission line corridor and limited areas used by vehicles forced to leave the primary channel when accessing the remedial action locations. The boundaries of the contaminated areas were delineated using stakes.

Consistent with requirements for the Weldon Spring site, personal protection measures were taken during the survey. Field personnel were required to wear special knee-hi rubber boots, disposable cotton gloves, a hard hat, and safety glasses. Field personnel were accompanied by environmental health and safety personnel who were equipped with a portable monitor for detecting external radiation and a communications radio in case of emergency. No food or beverage was allowed in the survey area. Water was allowed if it was in a sealed container and if the persons hands were scanned using the monitor and washed with disposable wipes before handling the container. Before exiting the survey area, hands, boots and equipment (trowels) were scanned for contamination. Upon return to the main part of the Weldon Spring Site, both for lunch and at the end of the day, a boot wash and full body scan were completed to monitor for potential contamination.

3.3 Survey Methodology

The survey methodology entailed a surface reconnaissance of areas adjacent to contaminated locations designated for remediation. Previous survey results within the drainage (i.e., an isolated projectile point) indicate a relatively low potential for the existence of significant sites adjacent to the cutbanks where the planned remediation will take place. The pedestrian survey consisted of transect intervals spaced 10 m apart. Locations of the transects are highlighted on the figures presented in Appendix A. Transects were limited to relatively flat terrace areas adjacent to the contaminated locations, turnout areas, and areas identified as likely to be modified for the access road. Much of the area within the drainage consists of steep slopes which are not likely to contain archaeological material nor be impacted by remedial action activities.

Within each transect, systematic troweling to remove heavy leaf litter was conducted to improve surface visibility when necessary. This procedure was used every 10 m along the transects whenever possible. An area of approximately 30 cm by 30 cm was cleared. If one piece of cultural material was encountered, the cleared area was expanded to a minimum area of one meter by one meter. If more than three artifacts were encountered, the transect interval was reduced from 10 m to 5 m in four directions to attempt to delineate the extent of the artifact scatter. No artifacts were collected.

3.4 Survey Results

Two areas north of Highway 94 were surveyed. Both areas exhibited evidence of extensive human ground disturbance within which significant cultural resources are unlikely to be encountered. Survey transects of 10 m intervals were completed only for undisturbed and minimally disturbed areas (see Appendix A). In areas of low surface visibility, surface debris was cleared with a trowel. No cultural material was encountered in either of the two areas.

The main portion of the Southeast Drainage survey was conducted within a 1.6 km-long corridor along the stream channel from just north of the transmission line corridor to the Katy Trail along the Missouri River. The transmission line runs perpendicular to the stream channel approximately 0.5 km downstream from Highway 94. Within that corridor eleven areas adjacent to planned activity areas were surveyed (see Appendix A, areas are numbered sequentially from north to south).

No archaeological material was encountered in four of the areas (Areas 3, 4, 6, and 7). In three of the other areas, material was encountered in the form of isolated occurrences of lithic debitage (2 isolated flakes on opposite ends of the area in Area 5 and 1 isolated flake each in Areas 10 and 11). The previously reported historic site is located to the east of Area 10, but is well outside the planned action area and would not be impacted by the remediation. It should also be noted that portions of Areas 10 and 11 have been disturbed by vehicular traffic along the existing Pioneered Path. The isolated

chert flake found in Area 10 was found on the road surface. Two isolated stone tools (one uniface and one blade, designated isolated find IF 6 and IF 7, respectively) were encountered within the stream channel in two different locations in Area 8 (exact locations are provided in Appendix A). The artifacts have more than likely been removed from their primary context and redeposited by stream action. The nearby cutbanks were closely examined for evidence of eroding buried deposits, but none was encountered. It is also possible that these artifacts were redeposited recently, possibly during one of the major Missouri River flooding events that took place after the 1990 survey was conducted. In any event, the lack of contextual integrity and the isolated nature of the artifacts makes it unlikely that they will be considered significant cultural resources. Additional isolated finds were encountered by chance during the survey while in transit from one remedial action location to another. These included a historic bottle (IF 1) located on the east terrace north of Area 1 and a possible lithic tool (IF 5) located in the stream channel (out of primary context), just north of Area 2. In conclusion, these eight areas and the two isolated finds are unlikely to require any further action regarding cultural resources prior to initiation of cleanup activities.

The three remaining areas (Areas 1, 2, and 9) did contain archaeological material which warrant awareness and precaution by the remedial action team even though the locations are not immediately within the planned action areas. Each area will be addressed separately below (refer to Appendix A for detailed locational information).

Archaeological material was encountered in three separate locations within Area 1. On the bank slope within a contaminated area just north of the transmission line, a flake and a possible lithic tool were found (designated IF 2). It was unclear whether the materials were eroding out of the cutbank or had been redeposited on the slope. A brief visual inspection of the adjacent cutbank was conducted but no additional material was noted. Further downstream east of the channel at the base of the steep slope where it adjoins the stream terrace, a lithic artifact (blade) and one chert flake were found on the surface. As no additional material was encountered, it is considered an isolated find (IF 3) rather than a site. This area is not adjacent to any contaminated areas and as long as the access road remains in the channel at this location as planned, it is highly unlikely that the area will be impacted. On the opposite side of the stream channel, near Benchmark (BM) 313, where the base of a considerably washed out cutbank slopes to meet a gravel terrace, a battered scraper-like lithic artifact was noted (IF 4). Due to its condition and proximity to the channel, this artifact has questionable contextual integrity and has likely been redeposited. No other definitively cultural material was noted nearby (an extremely battered piece of lithic material remotely resembling an artifact was observed but dismissed as non-cultural).

Area 2 contains two areas in which archaeological material was recorded. The first area consists of a hearth feature (Feature 1) north of two contaminated areas. Evidence of fairly recent historic use of the hearth was present (rusted tin can, Bud Dry can--indicating use within last ten years, and small piece of plastic), but no lithic material was detected to indicate prehistoric use. Although this area is unlikely to be considered a

significant cultural resource, the limited nature of the surface survey does not preclude the possibility of finding significant buried remains associated with the hearth. The second area is located just south of one of the largest contaminated areas in the Southeast Drainage. Designated as Site 1 of the Weldon Spring Site Southeast Drainage (WSS-SD-1), the location consists of a lithic scatter along the base of the hill slope extending for approximately 30 m. The site ends at one of the four springs present within the drainage. Several flakes (approximately 20) of at least two different chert types were observed in the area, as well as one core. This potentially eligible site is just outside the planned remedial action area; should it become necessary to disturb it during remediation, Phase II testing will be required to evaluate the site as to whether it meets the criteria of eligibility for listing on the *National Register of Historic Places*.

The last area in which archaeological material was encountered is just south of Area 9. Similar to Area 2, this location contains one of the four springs present in the drainage. Designated as Feature 2, this area consists of a rock cairn resembling the shape of an arrowhead, pointing to the spring location. Again no evidence to support the age of the cairn was present. Two chert flakes and a number of blocky chert fragments were found in the surrounding troweled areas, but not at a density to warrant a site designation at this time. Due to the proximity to the spring and the presence of at least some lithic material, the possible presence of a site should not be discounted. However, this area is again outside of any imminent danger from remedial action activities and no further testing was completed.

4 Recommendations

Based on the results of the survey it appears that current plans for remediation activities would not affect significant cultural resources. It is therefore recommended that the remediation activities in the Southeast Drainage be allowed to proceed as scheduled, pending concurrence by MDNR-SHPO. It is also recommended that four areas (IF 3, Feature 1, Site WSS-SD-1, and Feature 2) be acknowledged as potentially eligible cultural resources and avoided by the remedial action team during the scheduled activities (i.e., no excavation, equipment storage/parking, or personnel loitering). Completed construction design does not include the aforementioned four areas and therefore, potential impacts to these areas are not expected to occur. However, if unforeseen circumstances arise which will lead to change of the construction design, Phase II testing would be necessary to determine the extent of the sites identified and to evaluate the sites against the eligibility criteria for listing on the *National Register of Historic Places*. Although the survey allows for some flexibility in the field regarding the clean-up activities, it is also recommended that any change in activity which would involve ground disturbance outside areas delineated in the present survey (Appendix A) undergo a similar cultural resource investigation and clearance by the MDNR-SHPO prior to initiation of that activity.

Because the results of this survey are limited to the identification of surface manifestations of potential archaeological sites, the possibility of encountering additional

cultural remains during remediation activities does exist. This is especially true given the number of isolated artifacts redeposited into the stream channel from unknown locations. However, because the planned activities are predominantly confined to contaminated areas and small areas adjacent to an actively eroding stream channel (in which no artifacts were discovered in the cutbank in the course of two field surveys -- Walters 1990 and the present survey in 1997), the likelihood of encountering a significant archaeological site remains small. In the event that archaeological material is unexpectedly uncovered during remediation activities involving a non-contaminated area, it is recommended that work in that area be stopped immediately and the MDNR-SHPO and a qualified archaeologist be notified so that the significance of the material can be evaluated. Provisions should also be established with the MDNR-SHPO for the appropriate actions should material be unexpectedly discovered in a contaminated area.

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APPENDIX A

(Restricted Distribution)