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Before the Director of the

Idaho Department of Environmental Quality

IN THE MATTER OF THE HAZARDOUS WASTE TREATMENT

ORDER GRANTING LIMITED AND STORAGE PARTIAL
REVIEW OF PERMIT

Docket No 10HW-0109

PERMIT FOR UNITS AT INEEL BLDGS. CPP 659/1659

IDAPA 58.05.013 [40 CFR SS 124.19]

DAVID B. McCOY,)
PETITIONER) APPELLANT BRIEF

I. INTRODUCTION - A DISASTER WAITING TO HAPPEN

Forty-five miles northwest of the Idaho National Engineering and Environmental Laboratory (INEEL), the site of one of the world's largest nuclear facilities and radioactive waste dumps, there is Mackay Dam. Mackay Dam is an earthen irrigation dam, 11 miles from the Borah Peak earthquake fault that generated the largest (7.3) earthquake in Idaho's history. Mackay Dam was built nearly a century ago without any thought given "to conform to seismic or hydrologic design criteria." [(1)] "The Utah Construction Co. had no previous experience in reservoir construction ..." [(2)] No one knows how safe the dam will be during the next earthquake or major flood.[(3)]

Since it was constructed, Mackay Dam has had under-seepage, water leaking out at the base of the dam, enough water to fill a backyard swimming pool about every 20 seconds. There is no abutment on the east side of the dam. The west side of the dam connects to fractured rock. The concrete in the spillway is breaking down and the iron in the spillway is covered with rust.

Despite the fact that the State of Idaho has classified Mackay Dam as a "high hazard," (4) the dam does not receive safety inspections from the State of Idaho. There is no monitoring equipment to warn of an impending dam burst. There is no watchtower or 24-hour watchman who stays at the dam to warn of weakening of the dam or to watch for terrorists with a truckload of military high explosives and timer fuses. There are no barriers to keep a truck from driving onto the dam or down the dirt road leading to the base of the dam.

The State of Idaho and the federal government have not considered a terrorist attack as a means by which Mackay Dam could fail. However, in the spring of 1933, during a drought, farmers desperate for water to irrigate their crops, dynamited the head house tower at the dam releasing all impounded waters, and destroyed diversion equipment at the Blaine Diversion. A week later they also blew up the diversion gates at Darlington. More threats of dynamiting caused the Utah Construction Co. to considerably reduce the asking price for its interest. An investigation failed to disclose those guilty of dynamiting. (5) (See News clips Attachment I).

Geologists who write about Mackay Dam assume the dam will fail, whether it is from another earthquake or from a large flood such as the 100- or 500- year flood.

Mackay Dam is capable of hurling an 80-foot high wall of water toward INEEL, 306,000 cubic feet per second, down the box canyon and channel of the Big Lost River. (6) The flood wave will drown the town of Mackay and its 600 residents, without warning, about twenty minutes after the burst. After the flood wave overwhelms a small diversion dam some eighteen miles before the nuclear facilities, nearly 67,000 cubic feet of water will rush onto the INTEC facility about 13 hours after the dam is breached.

The flood wave at INTEC could be four or more feet high. The power of the flood would be enough to float the eleven 300,000-gallon high-level radioactive underground waste tanks. The flood would overwhelm calcine bins, storage that is loaded with high level radioactive poisons. The floodwaters would slosh around for more than 60 hours spreading radioactive contamination. After the flood waters subside and the soil dry, winds or fires could spread radioactive poisons to surrounding communities.

Buildings, tanks and waste piles at the INTEC facility which lie exposed to the flood threat could potentially cause fires and explosions from water reactive chemicals. The "dry" underground spent nuclear fuel storage units at INTEC CPP-749 "Dry Wells" that DOE acknowledges have "degrading aluminum fuel cans and baskets" (7) are flood vulnerable. This spent nuclear reactor fuel could go critical if flooded because water acts as a moderator.

No specific emergency plans at INEEL exist for the flood.

Although Federal law requires a floodplain analysis and mapping for the entire INEEL site, that analysis has not been performed. The Department of Energy admits that its studies are not complete and those that have been done conflict in their conclusions.

A member of the public is tempted to ask: how can a century old dam be allowed to threaten a major nuclear facility and the largest underground water supply in the northwestern United States while experts argue about whether the flood wave will be 4916, 4917 or 4923 feet above sea level? What steps can be taken to prevent the disaster in the first place and how can the INEEL and the environment be protected? (8) Why isn't the diversion dam being rebuilt to meet regulatory criteria and additional flow channels for spreading areas being constructed? Even if these measures are taken, it assumes institutional maintenance of these INEEL diversion dams beyond the 100-year federal commitment to institutional control of the site. Why isn't the State of Idaho considering removal of Mackay Dam or at least inspecting it for its integrity?

The State of Idaho has experience ignoring disasters waiting to happen. In 1976, the earthen Teton Dam began eroding due to a leak at its base, then burst, resulting in 11 deaths and over a billion dollars in property damage. Teton Dam, built during the same era and of similar design, was only 125 miles away from Mackay Dam.

The Department of Energy (DOE) has only recently submitted a few documents to the Idaho Department of Environmental Quality (IDEQ) which address the floodplain at the INTEC facility at the Idaho National Engineering and Environmental Laboratory (INEEL). (9)

The DOE floodplain documents submitted for Volume 18 raise new, unresolved issues relating to noncompliance with the substantive and procedural requirements of the Resource and Conservation Recovery Act (RCRA) 42 U.S.C. 6901 *et seq.*, 40 CFR 264.18(b), 40 CFR §270.14 *et seq.*; the National Environmental Policy Act of 1969 (42 U.S.C. §4321 *et seq.* "NEPA") and the accompanying Council on Environmental Quality Regulations (42 U.S.C. § 1500 *et seq*; and, the Floodplain/Wetlands environmental review requirements of 10 CFR 1022 *et seq*., which DOE has failed to meet.

The 1/18/01 Response and documents, include, but are not limited to, a topographic map of the floodplain accompanying the Response. The documents were not made publicly available until on or about December 18, 2001, subsequent to the granting of Petitioner's Appeal in this matter.

The DOE documents also include a request from DOE to IDEQ for a three-year extension to furnish information for compliance with floodplain requirements. (10)

Petitioner's position, described below, is that IDEQ should continue a stay on permit approval and construction activity for the Volume 18 Debris Processing facility until DOE has complied with Federal regulatory and environmental laws including, but not limited to, proper public notification and provision for public participation for this action in the floodplain.

II. The DOE documents presented to IDEQ for RCRA floodplain review present misleading, incomplete, inconsistent facts and conclusions, and fail to comply with the state and/or federal requirements for information to be supplied under the Resource Conservation and Recovery Act (RCRA), the National Environmental Policy Act of 1969 (NEPA) and Floodplain/Wetlands Environmental Review Requirements of 10 CFR 1022 *et seq*.

IDAPA 58.01.05.012 and 40 CFR § 270.14(b)(11)(iv) require owners and operators of facilities within the 100 year flood plain to provide: (1) engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100 year flood, and (2) structural or other engineering studies showing the design of operational units and flood protection devices at the facility and how these will prevent washout. Flooding must be considered from "any source," which would require consideration of both ravine and overland flow. In lieu of these requirements 1 and 2, a detailed description can be provided for procedures to be followed before the facility is flooded to remove hazardous waste to safety at an eligible facility. (40 CFR 264.18(b). No procedures for safe removal of the hazardous wastes at CPP-659 under flood conditions exist. Moreover, DOE states that "Because the waste involved may be contaminated with high levels of radiation, moving the waste to a safe location before flooding occurs is improbable." (INEEL 7/6/00 letter to R.E. Bullock)

The requirements of 40 CFR 270.14, 10 and 264.18(b), 10 CFR 1022 and NEPA apply to the entire INEEL as a single facility. There is no site-wide floodplain analysis and topographic mapping for the entire INEEL facility that conforms to legal requirements.

"... [T]he two most recent and prevalent studies conducted by the United States Geological Survey (USGS) and the United States Bureau of Reclamation (USBOR) differ in their results. Further evaluation is needed to determine the appropriate conclusions that may be drawn from these studies and how that information may impact the RCRA permit applications." (3/16/2000 Letter of DOE-ID RCRA Permit Lead, Nicole Brooks to Robert Bullock IDEQ).

"The Waste Reduction Operations Complex (WROC) does not have a map in accordance with IDAPA 16.01.05.012 (40 CFR 270.14(b)(11)(iii) that shows whether or not the facility is within a 100-year floodplain." Regarding IDAPA 16.01.05.008 (40 CFR 264.18(b), adequate, documented evaluations were not made of the potential for flooding due to overland flow in the WROC permit application." (6/1/2000 Letter from DOE Donald Rasch to IDEQ Robert Bullock).

"We believe that the TAN-628 facility is not in the 100 year floodplain from any source. However, there is a need to obtain or develop maps using the FIA-equivalent mapping techniques that show the TAN-628 unit is not within a 100 year floodplain from any source thereby ensuring compliance with IDAPA 16.01.012." (6/1/2000 Letter from DOE Donald Rasch to IDEQ Robert Bullock).

"A new hydrologic analysis and report are needed to describe the hypothetical 100-year floodplain caused by localized run-on/runoff at RWMC." "The engineering analyses required under IDAPA 16.01.05.012 40 (CFR 270.14(b)(11)(iv) and (v)), need to be provided..." (6/1/2000 Letter from DOE Donald Rasch to IDEQ Robert Bullock).

Regarding INTEC, Rasch states: "In conclusion, the information provided in Volume 8 for the NWCF facility, and information contained in Volume 17, and Volume 18 must be updated to demonstrate compliance with IDAPA 16.01.05.008 and IDAPA 16.01.05.012 (40 CFR 264.18(b) and 40 CFR 270.14). Additional work needs to be performed to determine if upgrades are needed to prevent washout at the facilities described by these permit applications and the NWCF permit..." (6/1/2000 Letter from DOE Donald Rasch to IDEQ Robert Bullock).

The Engineering Design File (EDF-1747) 100-year floodplain analysis for the Volume 18 Debris processing facility relies on the 1986 Koslow and Van Haaften report (EGG-EP-7184, "Flood Routing Analysis for a Failure of Mackay Dam") for analysis for the 100-year flood. For numerous reasons, the Department of Energy cannot rely on and certify the 1986 Koslow and Van Haaften study to show compliance with the requirements of 40 CFR 264.18(b) and 40 CFR 270.14 for RCRA, 10 CFR 1022 floodplain requirements or NEPA. Here is a summary of reasons that will be more fully discussed below:

- The 1986 study has a disclaimer that there is no warranty, express or implied, for the "accuracy, completeness, or usefulness of any information ... disclosed." Certification for the EDF cannot be based on a study which disclaims its own accuracy, completeness and usefulness.
- Statements within the 1986 study caution against the using the study itself to draw conclusions regarding the calculated estimates of flood elevation, flow rate, etc. The study states that elevations must be based on more study of irregular topology.
- A floodplain analysis and topographic map are required for the entire INEEL facility.
- The 1986 study conclusions differ from other studies and no legitimate justification exists for rejecting other existing studies.
- There is no assurance that the 1986 study and the topographic map based on the study meets the requirement of use of "equivalent mapping techniques" of the Federal Insurance Administration (FIA-equivalent methods) to determine the 100-year flood elevation.
- Peak flood elevations at INTEC are not sufficiently conservative in light of other studies.
- The RCRA analysis is not the functional equivalent of the required NEPA floodplain analysis (10 CFR 1022) which must be performed.
- The Probable Maximum Flood should be adopted where consequences attributable to dam failure are unacceptable.
- Although the 1986 study addresses INTEC generally, there is no information specific to CPP-659 for which the RCRA Part B Application has been submitted.
- The 1986 study does not consider flooding from all sources, including riverine and overland flows.
- The topographic map submitted is not in compliance with legal requirements.
- DOE failed to disclose essential required data related to existing contaminate plumes under the proposed permit site

INTEC CPP-659 lies within the 100 year flood plain. (INEEL 1/18/01 letter to K. Kelly, IDEQ from Ronald Guyman, Director of INEEL Environmental Affairs). The calculated water elevation used by the Engineering Design File (EDF) for a 100 year flood including breach of Mackay Dam is 4916 feet. (EDF-1747, 12/01/00, p. 3). (Also see, Attachment A, Koslow (1986) map of 100-year flood that encompasses the INTEC). Peak flood elevations at INTEC are in dispute by United States Geological Survey (1998 USGS) and other studies as well as the HLW/EIS (discussed more fully below) which consider the maximum probable flood.

The USGS (1998) study summarizes numerous prior studies with differing conclusions about the possible flood wave elevation and notes at page 6:

> "Niccum (Aerojet Nuclear Company, written communication, 1973), Druffel and others (1979), Nobel (1980), and Koslow and Haaften (1986) examined the hypothetical failure of Mackay Dam and the behavior of flood waves downstream. If Mackay Dam failed, Niccum estimate that peak flow at the ICPP would be about 30,000 cfs. He indicated that the present channel and old flood channels of the Big Lost River would convey about 20,000 cfs. Druffel and others (1979) estimated that the peak flow resulting from the dam failure would be 54,000 cfs at the western INEEL boundary (about 45 miles downstream from the Mackay Dam). Nobel (1980) used a two dimensional model with cells 530 foot on a side, to simulate a peak flow in the area from the western INEEL boundary to the Radioactive Waste Management Complex (RWMC). He estimated that the depth of water at the RWMC resulting from the failure of Mackay Dam would be 6 feet. Koslow and Van Haaften (1986) estimated that peak flow would be 45,000 cfs at the southern INEEL boundary and 4,440 cfs at Birch Creek Playa near the [Test Area North] TSF and CTF. Rathburn (1989, 1991), estimated the depth of water at the RWMC, resulting from a paleoflood of 2 to 4 million cfs in the Big Lost River in Box Canyon and overflow areas, was 50 to 60 feet." (11)

The Engineering Design File's (EDF) places the lowest ground elevation at CPP-659 at 4912.1 mean sea level (msl) which occurs on the east side of the building. (EDF page 3). Thus, the depth of flood water may reach or exceed, depending on research utilized, 4 feet at the CPP-659 building foundation. The EDF calculates the peak flow resulting from a piping failure of Mackay dam and overtopping of the INEEL diversion dam to be a flow at the INEEL diversion dam of 28,500 cubic feet per second. The release from the dam is calculated to be 57,740 cubic feet per second. The EDF states "The peak flow is attenuated to 24,870 cubic feet per second and the peak water velocity is estimated to be 2.2 ft. /s. (EDF pg. 3).

The Idaho High-Level Waste & Facilities Disposition Draft Environmental Impact Statement (December 1999) (HLW/EIS) flood analysis is based on the overtopping of Mackay Dam coupled with the Probable Maximum Flood (PMF).

Utilizing the same 1986 Koslow and Van Haaften, and Bureau of Reclamation studies as the EDF, the 1999 HLW/EIS-0287 (p. 4-51) states a different conclusion from the EDF that the probable maximum flood at the INTEC is a "... peak surface water elevation at INTEC of 4917 feet, with a peak flow of 66,830 cubic feet per second in the Big Lost River measured near

INTEC." (12) "The average elevation at INTEC is 4,917 feet." (USGS (1998) "The peak water velocity in the INTEC vicinity was estimated at 2.7 feet per second." (HLW/EIS at 4-51). (13)

Contrary to the piping failure used by the EDF analysis, the HLW/EIS uses the scenario of an overtopping failure of Mackay dam coupled with the probable maximum flood. "The maximum flood evaluated was assumed to be caused by a probable maximum flood resulting in the overtopping and rapid failure of Mackay Dam." (HLWE/EIS P. 4-54). This determination is supported, as previously noted, in Koslow (1986 page 26). The HLW/EIS does not utilize the cubic feet per second flow rate at the INTEC stated by the EDF (2.2 cf/s). The HLW/EIS states "The Probable Maximum Flood [PMF] would quickly overtop and wash out the diversion dam so there would essentially be no effect on flows downstream of the dam. At INTEC, the PMF flow is estimated to be 66,800 cubic feet per second and the culverts are capable of passing 1500 cubic feet per second. Due to the relatively flat topography in the vicinity of INTEC, debris plugging would have little effect on the PMF flood elevation at INTEC." (HLW/EIS p. 4-54).

The Koslow and Van Haaften study recognizes that the use of a Mackay Dam piping failure scenario does not represent the upper bound event when compared to the magnitude of the Probable Maximum Flood (PMF). Koslow states (at B-22-23) "The flow from the general storm PMF scenario is of such great magnitude compared to the Mackay Dam spillway and outlet works capacities (3,250 cfs and 2,900 cfs respectively), that it will obviously overtop and cause Mackay Dam to fail." There is no rationale offered by INEEL's EDF report as to why it used the Koslow slow release 100-year "piping failure," and not the PMF scenario (also used in the HLW/EIS, especially given the inadequacy of the Mackay dam design, the spillway limitations, and the water level being essentially the same for all four of the INEEL flooding scenarios used by Koslow. (14) (Koslow, p. 14). "The spillway of Mackay Dam is not adequate to pass the PMF safely, therefore overtopping and subsequent breaching of the dam due to this PMF were analyzed." (Koslow, p. 16).

The DOE Engineering Design File and the topographic map use the 1986 Koslow and Van Haaften study to arrive at the 4916 feet peak water surface elevation by using the 100-year piping failure, instead of the PMF overtopping failure of Mackay Dam. The EDF claims calculated water elevation of 4916 at CPP-659 with a flood elevation of 4 feet at the building foundation. (EDF p. 3). If the Koslow study and the HLW/EIS are correct in using the PMF, the elevation at INTEC would be 4917 feet. This would result in a flood elevation of 5 feet above the CPP-659 building foundation. If the HLW/EIS (PMF) figures of 66,830 cubic feet per second are correct for the peak flow rate at INTEC, the EDF 100-year figure (28, 500 cubic feet per second being attenuated to 24,870 cubic feet per second) is less by a factor of 169%. The flood velocity in the HLW/EIS (2.7 f/s) and EDF (2.2 f/s) differ by 23%. The difference between HLW/EIS flood elevation (5 feet at INTEC) and the EDF flood elevation (4 feet at CPP-659) is 20%. In fact, the flood flow rate can reach 3 f/s. "The Water velocity on the INEL [sic] ranges from 0.6 to 3.0 ft./s and water depth outside the banks of the Big Lost River is typically 2 to 4 feet. (Koslow at page 30).

"The PMF should be adopted as the inflow design flood (IDF) in those situations where consequences attributable to dam failure for flood conditions less than the PMF are

unacceptable." (15) The potential consequences of flood disruptions at INTEC are too dangerous not to use the PMF flood elevation.

A 2001 EPA soil study of the ICDF landfill excavation immediately south of the INTEC found that the Big Lost River has not only migrated from its present channel but also has had major flood events. "The implication of the presence of these fist sized sediments is that the Big Lost River has, in its past, produced high energy environments of erosion and deposition in the area of the present landfill excavation. The river would have to have left its current channel and carved through the adjacent over-bank deposits with sufficient force to carry and then deposit cobbles greater than 3 to 4, and some up to 6 inches, in diameter. Significant water volumes and velocities are required to produce high energy deposits comprised of gravels and cobbles of this size range. These observations lead to the conclusion that location and design of the landfill in an area that has experienced fluvial flooding events of sufficient magnitude to produce these types of gravel deposits should consider the evidence of past events." (16) (Emphasis supplied). See Attachment G. This physical evidence in the immediate INTEC area at a depth of about forty-feet below grade (about the elevation of the bottom of CPP-659) verifies the PMF estimates as non-speculative.

PMF cannot be ignored as a requirement for analysis under the National Environmental Policy Act. Since analysis under RCRA must be the "functional equivalent" of a NEPA analysis, the Idaho Department of Environmental Quality is under a duty to require the analysis of the PMF. (See discussion infra, 12/9/91 Federal Facilities Agreement, 4.2(d) and 10 CFR 1022).

Considering that the HLW/EIS and the EDF both are using the USGS, 1986 Koslow, and Bureau of Reclamation (BOR) studies for their calculations which result in different conclusions, these are major discrepancies which could affect the accuracy of other calculations presented in the EDF with respect to hydrodynamic and hydrostatic forces expected to result as a consequence of the probable maximum flood. The prevention of washout at the CPP-659 could likewise be affected by the calculations. The HLW/EIS [pg. 4-54] states that "... in the event of a design basis flood with sufficient magnitude and duration, it may be possible that one or more buried [high-level] 300,000 gallon waste tanks could float." Another potential effect could be the failure of calcine bin sets. Shearing of service lines and the release of radioactive liquids is another potential hazard in addition to lack of access to tanks needed to receive flood waters pumped from CPP-659.

CPP-659 Debris Processing Facility Flood Table

Elevation/Flow Location By Information Source	100-Year Flood		Probable Maximum Flood PMF	
	Flow Rate cfs	Elevation msl	Flow Rate cfs	Elevation msl
Koslow (1986) w/Mackay Dam Failure INTEC	24,870 (piping failure)	4916	66,830 (Overtopping Failure)	4917
USGS (1998) w/o Mackay Dam Failure INTEC (Lincoln Blvd.) Cross Section # 20	6220	4923	N/A	N/A
USGS (1998) w/o Mackay Dam Failure INTEC (Monroe Blvd.) Cross Section # 21	6220	4918.1	N/A	N/A
USGS (1998) w/o Mackay Dam Failure INTEC (NE Corner) Cross Section # 22	6220	4911.6	N/A	N/A
USGS (1996) w/o Mackay Dam Failure INEEL SE Boundary 95% Confidence Range Above INL Diversion Dam	11,600 to 3,150 median at 7260	N/A	N/A	N/A
INEEL HLW/EIS (1999) INTEC	N/A	N/A	66,830	4917
Engineering Design File (1747) w/Mackay Dam Failure INTEC CPP-659	24,870	4916	N/A	N/A
Engineering Design File (1747) INTEC CPP-659 Lowest Ground Level Lowest Door Level First-Floor Level		4912.1 4914.3 4916'8" to 4917	N/A	N/A

For sources see accompanying text. Cubic per second (cfs). Elevation Mean Sea Level (msl)

The Department of Energy is engaging in an administrative process of 'shopping' for studies containing results which will provide the lowest possible peak flood elevations at INTEC. In a letter dated February 12, 2001, IDEQ provided comments on the January 18, 2001 EDF. IDEQ Comment 6 states: "The higher flood elevations calculated in the [1998] USGS by Berenbrock and Kjelstrom study give rise to concerns specific to protection of human health and the environment. The IDEQ has received and reviewed these studies, which document what seem to be significantly more conservative assumptions and which would result in these higher flood elevations. The flood levels listed raise significant concerns regarding the adequacy of

DOE's current flood protection devices and their ability to prevent washout during a 100-year flood. Provide a position paper summarizing the alternative assumptions used, which resulted in the higher flood elevations."

Rather than address the IDEQ concerns for higher flood elevations, the DOE response to the IDEQ 2/12/01 correspondence stated: "DOE-ID and BBWI have determined the USGS 1998 report is not to be used for RCRA permitting." The DOE erroneously claims that the 1998 USGS study gave lower flood elevations at CPP-659 and was thus less conservative than the 1986 Koslow and Van Haaften report which resulted in an elevation that was 2.9 feet higher, i.e., 4916 feet [mean sea level] msl. In fact, the 1998 USGS study states the peak elevation for cross-section 20, near INTEC, is 4923 feet msl. In order to invent this purported lower elevation, DOE resorted to "interpolation methods," that were not part of the USGS study, to calculate a 4913.1 feet mean sea level water surface elevation at CPP-659. DOE claimed that the flood elevation at CPP-659 for cross section 20 is "approximately 10 feet lower than the 4923 feet msl elevation referenced by the DEQ reviewer."

Although DOE-ID claims to have communicated with Charles Berenbrock, DOE did not provide any written, certified statement from the 1998 USGS study authors *themselves* or any other geologists or hydrologists that indicated the cross-sections 20, 21 and 22 had incorrect elevations, required interpolation or that the manner in which DOE had interpolated the cross-sections was correctly accomplished. DOE interpolated cross-sections 21 and 22, but did not interpolate cross section 20 (4923 feet msl) with either cross-sections 21 or 22.

The WSPRO computer modeling used by the 1998 USGS study (17) showing the higher flood elevations near INTEC is based on far less volume of floodwater than the 1986 Koslow and Van Haaften study. The 1998 USGS study simulated a "flow of 6,220 cubic feet per second (cfs) from cross sections 10 b through 37, the volume that would flow downstream if the diversion dam did not exist." The 1986 Koslow and Van Haaften study assumes that the 100-year flood coupled with collapse of Mackay Dam would create a Peak Flood Flow of 24,870 cfs.

The fact that the 1998 USGS study found higher peak water surface elevations at INTEC with four times less than the flow of the 1986 Koslow and Van Haaften study should be a huge warning to the DOE and the State of Idaho permit writers.

Additionally, a 1996 USGS study, found that: "The upper and lower 95-percent confidence limits for the estimated 100-year [Big Lost River] peak flow were 11,600 and 3,150 cubic feet per second respectively" at the Arco Gaging Station immediately up stream of the INEEL Diversion Dam. (18) This contrasts with the median flow rate used in the USGS 1998 study of a flow rate at the INEEL Diversion Dam of 7,260 cf/s. The point is that the 1998 USGS plotting of the 100-year flood footprint at INTEC is **not** using the possible, upper 95-percent confidence limits documented by USGS (1996) for INEEL flooding. Therefore, the 1998 USGS study dramatically underestimates the flood impact which could occur at CPP-659/1659 and other flood vulnerable INTEC operations.

Instead, the DOE chooses to ignore the profound differences and implications of the 1998 USGS and the 1986 Koslow study. The DOE arbitrarily chooses to take the 1986 Koslow and Van

Haaften figures with a higher peak flood flow, in order to present a lower estimated peak flood elevation. The 1998 USGS study shows higher peak flood elevations in the immediate INTEC vicinity but these higher elevations stem from much lower flow rates than the 1986 Koslow study.

DOE rejects the 1998 USGS study because the results do not agree with the conclusion that DOE wants to draw: that the flood waters at CPP-659 will be one foot below the first floor level of CPP-659. One foot can scarcely be viewed as a margin of safety. This is especially true in view of the USGS (1996) upper 95% confidence range of 11,600 cfs.

The 1998 USGS study utilized a WSPRO computer model for water surface profile computations. (19) The computer program modeled the flood elevations utilizing numerous specific localized surface and topographical features in the near vicinity of CPP-659 at INTEC. (See Attachment B that shows the location of the NWCF (CPP-659) in relation to the INTEC and Attachment C which shows the USGS (1998) 100-year flood inside the INTEC fence literally lapping at the CPP-659 and CPP-1659). The 1986 Koslow and Van Haaften study did and could not model these specific features in the vicinity of INTEC.

The DOE is asking for a partial permit for the CPP-659/CPP-1659, but fails to use the data which is most specific for that location. The 1986 Koslow study was not made for the specific purpose of determining the elevation of the CPP-659 building and could not model the irregular typography in using the DMBRK analysis. (Koslow, pg. 29). The USGS study comes closest to a method for modeling the conditions at INTEC which are in the near vicinity of the CPP-659/1659 buildings. However, nothing specific for CPP-659 has been modelled and no actual site specific study has been performed for CPP-659 for which the partial permit is being sought.

The USGS (1998) computer program modeled the three large circular steel culverts which cross under Lincoln Boulevard immediately west of INTEC which crosses the Big Lost River and its flood plain. The program measured and modeled the intersection at Monroe and Lincoln Boulevards, the concrete head-walls, the channel from Lincoln Boulevard to the railroad bridge, the river banks that are raised with their excavated materials, the U.S. Government railroad bridge and its size and abutments and concrete pier, canal banks, a bridge supported with concrete abutments, and downstream playas, and culverts. (See USGS (1998) cross-section numbers 20 through 23).

These USGS computer modeled features existing at the INEEL that had the effect of changing flood elevations at the various cross-sections. Section 20, at the intersection of Monroe and Lincoln Boulevards where 3 culverts allowed water to pass under Lincoln Boulevard showed water surface elevation of 4923 feet. (20) This elevation is 7 feet higher than the flood elevation that DOE would like to take credit for using the 1986 Koslow and Van Haaften flood elevation of 4916. Flood elevation of 4923 would also be 6 feet higher than the first floor elevation of CPP-659. The flood elevation of cross-section 21 would be 4918.1 which is still one foot higher than the first floor elevation of CPP-659. (21)

DOE is taking credit for elevations used by Koslow (4916 feet msl) despite the report's caution that the use of those elevations must be based on more study of irregular topology which is the type of study that was performed by the 1998 USGS study. The 1986 Koslow and Van Haaften study states: "Two major considerations govern the use of the results of this analysis. The first is the application of the calculated estimates of flood elevation, flow rate, etc. The second is the degree of uncertainty associated with those estimates and the assumptions on which they are based." (Koslow at p. 24). The Koslow study also cautions that "The calculated flow rates then provide the basis for a detailed review of flooding at sensitive locations along the Big Lost River channel. This review requires a high degree of experience in open channel flow in irregular topology, and was not within the scope of the current work." (1986 Koslow at p.29). (Emphasis supplied).

A conservative approach to the problem of an absence of localized data for the Koslow study, but higher elevations of the USGS study, would dictate that the localized computer modeling of the 1998 USGS study be applied to the flow volumes which are used by the 1986 Koslow and Van Haaften study.

It makes no sense for IDEQ to grant a Part B Permit for the Volume 18 Debris Processing before DOE has confronted the differences and implications of the 1986 Koslow and Van Haaften study, the 1998 USGS study and other studies as well as confronting the lack of flood data specific to CPP-659. DOE asks IDEQ to first permit the Debris Processing facility Volume 18 Permit and then grant an extension to conduct new floodplain studies. This DOE approach runs counter to all environmental law and regulatory precepts. DOE then wants use an internal INEEL committee to direct the studies *after* the permit is issued. DOE ignores the dangerous implications for public health and safety of the existing studies. (22) DOE is required to present accurate, complete, truthful information regarding the floodplain to IDEQ prior to the RCRA Part B permit issuance and commission of substantial federal resources to the project (see NEPA discussion below).

The topographic map [intec_permit_1999_200ft-el_v4, date drawn: 9/11/2001] provided to IDEQ by DOE does not satisfy the requirements of 40 CFR 270.14(b)(11)(iii) for an accurate flood plain map because the map is missing required information, contains inaccurate statements, contains a disclaimer, is not based on adequate data and does not include the entire INEEL. The topographic map was not received by IDEQ until 9/18/2001 and was not available for public review until on or about 12/18/2001.

The topographic map is not complete or final, but is subject to revision. A *disclaimer* on the topographic map of the INTEC area for the Volume 18 permit map provided by DOE states that the "Flood elevation indicated in this report and on this map is considered by DOE to be *interim*, pending issuance of a final flood plain determination under 10 CFR 1022." (Emphasis supplied). DOE has failed to consider or comply with the requirements of 10 CFR 1022. (See discussion below).

The elevation shown on the topographic map of 4916 feet at INTEC is incorrect if the HLW/EIS and Koslow PMF figure of 4917 is instead utilized. The topographic report states that the "... 4916 feet msl [mean sea level] contour interval, ... coincides with the estimated peak water

surface elevation in the INTEC area, (24,879 cfs) as is discussed in 'Flood Routing Analysis for a Failure of Mackay Dam,' by Koslow and Van Haaften (1986). The EDF statement is deliberately misleading because Koslow postulated four hypothetical dam failures. The 1986 Koslow study uses 4917 feet at INTEC as the peak water surface elevation for an overtopping failure to identify the Probable Maximum Floor (PMF). The difference between the overtopping failure and the piped failure is that Koslow's piped Mackay Dam failure scenario would result in delay that occurs over a significant amount of time and therefore the flood surge is spread out possibly diminishing the impact on INEEL facilities.

The figure used in the EDF analysis of 24,879 cf/s in the INTEC area is also misleading because as previously stated **"The flow from the general storm PMF scenario is of such great magnitude compared to the Mackay Dam spillway and outlet works capacities (3,250 cfs and 2,900 cfs respectively), that it will obviously overtop and cause Mackay Dam to fail." (23)**

Koslow used the peak figure (PMF) of 66,830 cf/s at INTEC for an overtopping failure. (See, Koslow (1986), Table 7 at p. 26, [**also see**] HLW/EIS 4-51 through 4-54). The elevation of the Big Lost River stream bed stated in the topographic map is 4910 feet. Koslow places the elevation of the stream bed at 4911.

There is no assurance or information provided that the assumptions and analytical techniques utilized by the 1986 Koslow and Van Haaften for the Mackay dam failure scenario meets the requirement of use of "equivalent mapping techniques" of the Federal Insurance Administration (FIA-equivalent methods) to determine the 100-year flood elevation. The 1986 Koslow study has on its cover page a **disclaimer** that there is no warranty, express or implied, for the "accuracy, completeness, or usefulness of any information ... disclosed." DOE cannot certify information as accurate, complete and useful when a disclaimer on the document to be certified exists against that assertion.

The INEEL EDF topographic flood plain map fails to comply with 40 CFR § 270.14 to map the flow of flooding from "any source". (See, 40 CFR 264.18(b) (2) (i)). The DOE letter of transmittal (9/13/ 2001) for the topographic map purports that the map illustrates the 100-year flood plain which is based on the analysis by Koslow and Van Haaften (1986) in the report entitled "Flood Routing Analysis for a Failure of Mackay Dam". While the 1986 study is presented as the upward bound, the study does not include overland flow of flood waters or use the proper flood scenario from Koslow (see above discussion). The flooding map does not take into account the additional flow which would occur from overland sources. (IDEQ/INEEL Quarterly Meeting June 8, 2000 Neil C. Hutten- "Overland flow study for INTEC is needed.")

The EDF study assumes considerable attenuation/absorption which may not be applicable to the "typical" INEEL flooding during times of frozen ground, snow pack melt, and excessive precipitation reported no loss of flow resulting from infiltration during the early part of the 1965 flood of the Big Lost River. At that time infiltration was blocked by frozen ground and (or) ice. DOE statements are admissions that the specific information required to be provided to show

compliance with 40 CFR part 264 standards for a Part B Application is not currently available. The permit should be denied because the required information is not available. "DOE is not selecting either the USGS or the BOR studies as determinative." Additional studies are recommended. (12/22/2000 letter of Ronald Guymon to IDEQ Katherine Kelly). *DOE is proposing an extension for making a final floodplain determination to year 2002.* Guymon states: "The extent of the 100-year floodplain at INTEC due to overland flow, as opposed to riverine sources described above, is not currently known. A study that assesses 100-year storm runoff from the entire watershed area that drains toward INTEC, including runoff from facility drainage areas, must be undertaken." Additionally, the 25-year, 24-hour storm evaluation has not been updated to reflect current hydrologic conditions at the site. Detailed topographic and hydrologic analyses necessary to make these determinations have not been performed. (See, CCN 00-010826- July 6, 2000 INEEL letter and enclosure to R.E. Bullock-Floodplain Requirements for Volume 18 of the RCRA Part B Permit Application for the INEEL - Compliance schedule).

The requirement to provide a topographic map applies to the entire INEEL, not just the INTEC. 40 CFR 270.14(b) (19) requires "A topographic map showing a distance of 1000 feet around the facility ..." This requirement has not been met. No topographic map for the INEEL has been furnished.

The topographic map does not contain required information regarding either the aquifer or the groundwater and its direction of flow and rate. 40 CFR 270.14(c) (3) requires "On the topographic map under Paragraph (b) (19) of this section ... to the extent possible, the information required in paragraph (c) (2) of this section." Section (c)(2) requires "Identification of the uppermost aquifer and aquifers hydraulically interconnected beneath the facility property, including groundwater flow direction and rate, and the basis for such identification, i.e., the information obtained from hydrogeologic investigations of the area."

A groundwater monitoring program must be set forth. (40 CFR 270.14(c)(5).

Groundwater which does not have the presence of hazardous constituents must comply with requirements of 40 CFR 270.14(c)(6). Groundwater which has the presence of hazardous constituents must comply with requirements of 40 CFR §§ 270.14(c)(7) and (8). The Volume 18 Part B Permit Application does not specify any compliance with those requirements. This issue is especially egregious given that major contaminate plumes exist under the INTEC. (24) The existing soil and ground water contamination from INTEC past/present operations pose an extreme hazard from flooding which will drive these pollutants into the aquifer. Any additional operations contemplated by the subject permit will only add to this existing hazard and therefore must be stopped.

The topographic map does not provide details for the plume of contamination. 40 CFR 270.14(c)(4) requires "A description of any plume of contamination that has entered the ground water from a regulated unit at the time that the application was submitted that: (I) Delineates the extent of the plume on the topographic map required under (b)(19) of this section; (ii) identifies the concentration of each appendix IX, of part 264 of this chapter, constituent throughout the plume or identifies the maximum concentrations of each appendix IX constituent in the plume."

(See, Final Record of Decision, INTEC, October 1999, for ground water contaminate zones. (DOE/ID-10660)).

Because the flood information is misleading, not complete and in conflict, neither IDEQ nor the public has any assurance that the topographic map is true, accurate and complete, which is required for a RCRA certification under 40 CFR 270.11(d) and 270.30 (k). (See discussion above).

Certifications accompanying the topographic map were made under penalty of law by W. W. Gay, General Manager Bechtel BWXT Idaho, LLC, (8/21/01) and B. A. Cook, Manager, Idaho Falls Operations Office, Idaho (9/11/01). **The certifications have no validity because (1) the facts relied upon are incomplete, false, or misconstrue the facts, (2) as discussed above, the required information for a topographic map is missing.** The topographic map Legend has a disclaimer that the map is merely an "interim" document, "pending issuance of a final floodplain determination under 10 CFR 1022." Thus, the map cannot be complete where it is interim and subject to revision. The topographic map relies on the 1986 Koslow study, which also has a disclaimer on the cover page and the study also has no certification. Petitioner contends moreover that Gay, and Cook cannot legally make the Regulatory Certification that the topographic map is "true, accurate and complete" because of the missing information regarding the underground water and the contamination plume along with the disclaimers and the fact that a topographic map is required for the entire INEEL facility.

Also, a Regulatory Certification signed (1/18/01) by B. A. Cook and P. H. Divjak,

Vice President, Operations Bechtel BWXT Idaho, LLC, attempts to include in the certification "recommended language for insertion to the existing Volume 18 Part B permit application as Section B-3b." The inclusion of Section B-3b for Regulatory Certification with the Engineering Design File is improper because the document itself is not properly a part of the Engineering Design File is without any date, review and/or approval signatures and lacks authorship as well as certification. Moreover, the *B-3b document is precluded by prior certified representations of the DOE-ID from being utilized*. The B-3b document submitted for RCRA permitting purposes cites the 1998 USGS study. The Attachment B Certification for the May 18, 2001 Transmittal of Response to Comments on Floodplain Information response for comment 6 states that "DOE-ID and BBWI have determined the USGS 1998 report is **not** to be used for RCRA permitting." (Emphasis supplied.) The Certification for the Transmittal of Response to Comments on Floodplain Information and the Certification for Floodplain Determination and Prevention of Washout (signed 1/18/01) are therefore in conflict with respect to their assertions. Even though the DOE claims that it will not use the 1998 USGS study, document B-3b attempts to take credit for the lower flow rate of 7,260 cubic feet in the 1998 USGS study without referencing the higher flood elevations (up to 4923 ft. msl) at INTEC. (See discussion above).

IDEQ should continue the stay on the issuance of the permit and construction activities until the floodplain/wetlands requirements of 10 CFR 1022 and NEPA have been complied with by DOE and approved by IDEQ.

10 CFR 1022 *et seq* requires that Federal agencies implement the floodplain/wetlands requirements through existing procedures such as those established to implement the National Environment Policy Act (NEPA) of 1969. (10 CFR 1022.1). The floodplain/wetlands requirements are raised by the text of the topographic map and have not been considered or complied with by DOE prior to the floodplain issue being raised.

IDEQ cannot ignore the notice or early public review requirements of 10 CFR 1022 or NEPA. On 12/9/91 the State of Idaho Department of Health and Welfare (now IDEQ), entered into a Federal Facility Agreement. Under the terms of the Federal Facilities Agreement/Consent Order, IDEQ is charged with assuring compliance with all state and federal laws for hazardous waste management. (12/9/91 Federal Facilities Agreement, 4.2(d)).

The current RCRA Part B Application analysis is inadequate to constitute the functional equivalency of the required NEPA analysis. The National Environmental Protection Act (NEPA) requirements have not been satisfied. DOE is required, to the extent possible, to accommodate the requirements of Executive Orders 11988 and 11990 through applicable DOE NEPA procedures. 10 CFR 1022.2(2) (b). Volume 18 does not reference, or meet the 10 CFR 1022 NEPA requirements. DOE must perform an environmental impact statement under the requirements of 10 CFR 1022 *et seq*. sufficient to meet the requirements of NEPA. (25) DOE's environmental impact statement must include: environmental impacts, any adverse environmental effects which cannot be avoided, alternatives, relationship of short term use and enhancement of long term productivity of the wetlands, and any irreversible and irretrievable commitments of resources.

IDEQ has unreasonably and arbitrarily limited this appeal to a review of floodplain information only with respect to the Debris Processing Facility. The public is entitled to participate in all the environmental considerations of recently submitted information with respect to INEEL *before* the DOE proceeds with action. Petitioner argued at the July 21, 2000 IDEQ public hearing that there was no consideration of environmental effects and alternatives of the proposed course of action within the documents. IDEQ incorrectly responded that "This is beyond the scope of the permit review process..." (See, October 5, 2001 IDEQ Response to Comments and Approval of a Permit on the INEEL, EPA ID No. ID4890008952, p. 3).

The 1995 DOE/EIS analysis for local runoff and floodplains (p. 4.8-3) is less than one page, and is wholly deficient because it does not examine or describe what the environmental effects of inundation of INEEL facilities would be from various flood scenarios. NEPA requires not just an analysis of CPP-659, but also an analysis of the surrounding buildings and contaminated grounds and groundwater which are subject to the flooding.

DOE has failed to provide procedures and opportunity for early public review of proposed floodplain/wetland plans and actions, such as the debris processing facility. (10 CFR 1022.2(a)). Petitioner has argued elsewhere in this proceeding that the RCRA expanded public participation

rule has not been observed by DOE or IDEQ. IDEQ's position is that the rule was not adopted by IDEQ until 1997 so as to preclude application to the Volume 18 Part B Permit Application. There are no minutes of the public pre-application meeting minutes because the meeting was not held. (See, 40 CFR 270.14(b) (22) and 40 CFR 124.31(c)).

The public notice and review requirements of 10 CFR 1022 for floodplains/wetlands have, however, been in effect for DOE since *1977*. DOE has failed to meet its public notification duties for this floodplain action and provide opportunity for any public review of any plans or proposals for this action in the floodplain. (10 CFR 1022.3(3). (See, 10 CFR 1022.4(q) requirement for Federal Register notice for proposed floodplain requirements). The DOE had and continues to have a duty under 10 CFR 1022, since 1996 or earlier, to give public notice and provide the public early opportunity to review the proposed action for debris processing and any other plans to be carried out within the floodplain. What has instead occurred in the Volume 18 proceeding is that DOE, with IDEQ's tacet approval, has shut the public out of the floodplain procedural process which would enable the public to have a more comprehensive look at the floodplain in relation to the numerous proposals for actions. DOE is attempting to bypass its own internal agency rules. This violates the public's right to be involved in the decision making process.

IDEQ should continue to stay Part B permit approval and construction until DOE has complied with these requirements for full public notification and review provided under the floodplain requirements of 10 CFR 1022.3(3).

The May 29, 2000 IDEQ notice for Docket No. 10HW-0003 debris processing did not provide a whisper of notice to the public that the permit was to involve an action for treatment units within the floodplain. (Likewise, the notice of the INEEL Liquid Waste Management System, incorporating the Process Equipment Waste Evaporator, the Liquid Effluent Treatment and Disposal facility, and the High Level Liquid Waste Evaporator, failed to provide notice to the public of intended floodplain activities.)

Consideration of environmental consequences and alternatives or for remediation to the proposed action which is required under 10 CFR 1022 have not been presented for analysis for the Volume 18 debris processing. **Possible remediation of the flooding consequences for CPP-659/1659 may be the construction of a barrier around the building to flood proof the building. Construction of a diversion dam and channels to withstand the collapse of Mackay dam may be another possible way to flood proof INTEC.** The extended duration of the flood in excess of 60 hours (5 days) would require additional subsurface barriers to prevent sub-surface flows.

Quarterly RCRA meetings are secret IDEQ/DOE meetings held in violation of state and federal open meeting laws. The RCRA meetings are used to preclude the public from obtaining information regarding issues which IDEQ and DOE jointly discuss and decisions made at the meetings regarding those issues. An IDEQ/INEEL Quarterly Meeting June 8, 2000 Neil C. Hutten document, only recently furnished to the public as a result of this appeal, states that DOE is developing a draft NEPA Notice of Floodplain Involvement. A draft notice of floodplain involvement was/is required before the intended issuance of the Volume 18 Part B Permit and at

an early stage of the development of the permit to include the public. No notice was ever presented in the Federal Register by DOE describing this proposed debris processing action in the floodplain. (See 10 CFR 1022.4(q)) notice requirements for proposed floodplain actions). If IDEQ steams ahead with permit approval, the public will be presented with a DOE *fait accompli* in the floodplain with no meaningful consideration given by DOE (or IDEQ) to environmental protection, procedurally required under NEPA, and alternatives or modifications to "...minimize potential harm to or within the floodplain and to restore and preserve floodplain values." (10 CFR 1022.5(b))

Because the HLW/EIS has not been finalized and no Record of Decision exists, DOE is under a current duty, to the extent possible, to apply the requirements of 10 CFR 1022 to this debris processing action and other proposed actions in the floodplain/wetlands. (10 CFR 1022.5(b)). The current 1999 draft HLW/EIS does not have any listing in the index for debris processing. No alternatives to the proposed action were presented.

The debris processing facility action is a critical action as defined by 1022.4 (c) involving highly volatile, toxic or water reactive materials in the floodplain. The critical action floodplain is defined as the 500-year (0.2 percent) floodplain. No 500-year flood analysis has been performed for the Debris Processing facility or for the other facilities housed within or near to CPP-659/1659, such as the Tank Farm, Process Equipment Waste Evaporator and the High Level Liquid Waste Evaporator.

No adequate NEPA or 10 CFR 1022 environmental analysis exists for floodplain issues which would link the Debris Processing Facility to the hazards associated with floodplain issues which could cause failure at other facilities at INTEC including, but not limited to, facilities such as the tank farm facility (floating of 300,000 gallon tanks) and the New Waste Calciner Facility calcine bin sets. SPERT-III and SPERT-IV overland flow analyses are not complete (in internal review) and available for public review (IDEQ/INEEL Quarterly Meeting June 8, 2000- Neil C. Hutten).

The public is entitled to consider floodplain issues related to the Debris Processing facility in relation to the above or other facilities, such as the Liquid Effluent Treatment and Disposal facility, Process Equipment Waste Evaporator and the High Level Liquid Waste Evaporator. The new INTEC waste percolation ponds and the ICDF landfill in the flood zone may also receive some of the Debris Process facility effluent.

Service water from the Debris Processing facility which will be processed by the Process Equipment Waste Evaporator (PEWE) and the Liquid Effluent Treatment and Disposal Facility (LET&D) waste will enter into the [INTEC] percolation ponds. The contamination will be spread further into the soil column and aquifer by flooding which will occur at INTEC. INTEC continues to discharge about two million gallons a day of liquid effluents per day to the existing contaminated soil column under the existing percolation ponds These ongoing discharges violate Doe Order 5400.5 paragraph 3.c(2).

INEEL has not complied with the provisions of DOE Order 5400.5 since it was issued in 1993. In addition, INEEL does not have a defensible technical basis for a new percolation pond, which could create a new contaminated soil column. In designing the new percolation ponds pond, the

hazards and the requirements of DOE Order 5400.5, which prohibit the creation of new soil columns, were not rigorously analyzed. There is potential for service water to contaminate a soil column. "In another example, the risks associated with potential and inadvertent discharges of radioactively-contaminated water to the INTEC percolation pond have not been fully analyzed." (26) [See Attachment F].

Additionally, RCRA's mandate of "cradle to grave" management of hazardous waste dictates that the solid waste discharged from the Debris Processing and HEPA Leaching operation be disposed in a RCRA compliant disposal facility. The designated INEEL CERCLA Disposal Facility (ICDF) slated to intern this waste is not RCRA compliant because the ICDF, being contiguous with INTEC, is also in the Big Lost River floodplain. The CERCLA facility violates DOE Order 5400.5 because it is being built in the floodplain over the aquifer.

DOE is using the CERCLA process to circumvent RCRA Land Disposal Restrictions (LDR). (27)

Numerous other unresolved floodplain issues exist at the INEEL with severe environmental consequences when viewed as a totality along with the planned debris processing facility. "Nobel (1980) used a two dimensional model, with cells 530 feet on a side, to simulate a peak flow in the area from the western INEEL boundary to the Radioactive Waste Management Complex (RWMC). He estimated that the depth of water at the RWMC resulting from the failure of Mackay Dam would be 6 feet." " Rathburn (1989, 1991), estimated that the depth of water at the RWMC, resulting from a paleo flood of 2 to 4 million cubic feet/sec in the Big Lost River in Box Canyon and overflow areas, was 50 to 60 feet." (28) The EPA recently expressed concerns that there is enough plutonium in the ground at Pit 9 at RWMC that a flood event could cause a criticality reaction, a release of high level radiation. (29) A RWMC RCRA floodplain issue is that "Overland flow hydrology needs to be updated to include new topography, new buildings, and hydrology changes since 1993. (See INEEL 7/6/00 letter to R.E. Bullock IDEQ). “When the ground is frozen, snowmelt flooding can be extensive. The Radioactive Waste Management Complex has been flooded at least three times in recent years (1962, 1969, and 1982 by local runoff from rapid spring thaws.” (Koslow (1986) pg. A-3). The critical and problematic combined risk of snowmelt with Mackey Dam failure analyses has yet to be done.

IDEQ knows that DOE has plans for the High Level Liquid Waste Evaporator (HLLWE) and that certain tanks associated with the Debris Processing facility have no RCRA permits. (See discussion above regarding tanks VES-NCC-122 and VES-NCC-119). *IDEQ still refuses to require the DOE to hold the preapplication meeting required by the RCRA Expanded participation Rule or involve the public at the early stages under the Floodplain/Wetlands Review requirements of 10 CFR 1022.* Petitioner can only wonder how long IDEQ will continue to refuse to protect the public its procedural rights with respect to the IDEQ hazardous waste management program. IDEQ must begin to apply the full requirements of federal environmental law as well as inclusion of the public at the earliest stages of planning for actions at INEEL.

No legal provision under the RCRA statutory scheme exists for granting a three-year extension to the Department of Energy after the effective date of the issuance of a permit for Volume 18. The floodplain information, assessments and complete topographic map are mandatorily required by 40 CFR 270.14 *et seq*., the NEPA and 10 CFR 1022 prior to issuance of the permit and the commitment of Federal resources. The Department of Energy seeks a three year extension to submit the above floodplain assessments for riverine and overland flow based on DOE's reading of 40 CFR § 270.14(b)(11)(v). DOE *misreads* the regulation which applies to an "existing facility." Although the Debris Processing facility will be housed in the existing CPP-659 building, the debris processing facility is not an existing operating facility, but is a modification of a facility involving a new and different process for which a RCRA Part B permit is required.

The debris processing facility and other facilities with a pending Part B application, e.g., the evaporators (the PEWE and the HLLWE), lie within the floodplain and full assessment under 10 CFR 1022 *et seq.* must also be provided prior to these project permit approvals. IDEQ should not grant DOE approval of the Part B permit prior to DOE furnishing the necessary floodplain information as provided by state and federal law. IDEQ should not allow DOE to rely on studies with disclaimers, to provide false, inaccurate, incomplete, conflicting and unsubstantiated data and/or fail to provide the necessary floodplain information and skirt the requirements for protection against washout. DOE is required to provide the floodplain assessments in a timely fashion to complete the Part B Application requirements previous to permit issuance.

In the event the 100-year flood was to occur during the unpermitted period of operation of the debris processing facility, DOE has no provisions for safe removal of the hazardous wastes which would be contained in CPP-659. DOE has not met the necessary "in lieu of" requirements for safe removal of wastes to a RCRA compliant facility which would allow DOE to avoid the application of provisions 40 CFR 270.14(b)(11)(iv)(A) and (B).

The Debris Processing facility should be required to meet current standards for construction and location for protection of public health and safety.

The INEEL EDF study repeatedly states "construction of the NWCF follows many of the methods described in the [American Concrete Institute] ACI standards to assure a watertight structure." (EDF-1747 page 11). There is no specification as to which aspects of the standards conform and which do not! Therefore the whole reference is in question. Moreover, the EDF file calculates the retaining wall's capacity to withstand a flood assuming retaining wall (building perimeter foundation) reinforcing steel (#4 bar spaced on 8 inch centers) (EDF-1747 page 9) without any documentation that was actually used.

This retaining wall capacity data was totally assumed without other basis or documentation. The EDF states (EDF-1747 pg. 8): "Another important consideration is the ability of the retaining walls to withstand lateral earth pressure. In the section on hydrodynamic analysis, the at-rest lateral earth pressure of saturated soil was computed and shown to be 2 times larger than the pressure of dry soil. This particular flood hazard affects all below-grade retaining walls that support backfill. The structural design of the second and third levels of CPP-659 is complex, and the concrete retaining walls have a variable height, width, and thickness. Surcharge loads are

present in addition to lateral earth pressure. Furthermore, the strength of reinforced concrete depends on the exact size, number, and placement of the steel bars. **Therefore, a thorough assessment of the effect of soil saturation on the stress in retaining walls is complex structural analysis that is beyond the scope of this study."** (Emphasis supplied).

Additionally, interior wall spacing is assumed. "To examine the loading on the weakest section of retaining wall, assume that the length of the beam is equal to 8 feet - the maximum spacing between supports ..." (EDF pg. 8 & 9).

No satisfactory engineering analysis or structural or other engineering studies have been provided by DOE for the combined overland flow and the riverine flow. The January 18, 2001 Response does not provide an analysis for the combined overland and riverine floodplain effects. The Engineering Design File included with the 1/18/01 Response is based only on "hydrodynamic and structural analyses of flood hazards at CPP-659 during a peak flow in the Big Lost River." (EDF-1747). The analyses are also not based on the 100-year flood and overtopping of Mackay Dam.

III. Numerous structural issues related to flooding appear from the Engineering Design File (EDF) for the CPP-659 Flood Hazard Analysis.

The EDF states "The structural features of the concrete foundation at CPP-659 were examined during a field investigation." (EDF, p, 7). The field investigation which was the basis for many of the statements contained in the EDF is not provided as part of DOE documentation furnished to IDEQ or the public. Without the field investigation documents the public and IDEQ are unable to review numerous assumptions or assertions based on the field investigation and/or the relationship to RCRA requirements.

There is no apparent reference to when the field investigation was performed or who performed the field investigation and no certification of the investigation is presented. (EDF, p. 7). Is the field investigation relying upon the quarter-century-old *Soil and Foundation Investigation, Proposed New Calcining* Facility, Prepared for the Energy Research and Development Administration, Flour Contract No. 453504, Dames and Moore, 1976, listed in the EDF reference section? If this is the field study relied upon, how currently competent are the assertions in the EDF regarding the conditions of the retaining walls, the condition of the joints fitted with carbon steel, cracking and seepage? What is the current status of the condition of the CPP-659 building? What are the requirements with respect to current construction codes which should be in place for the Debris Processing facility as a new facility?

Many of the design practices of the American Concrete Institute, ACI Manual of Concrete Practice are asserted to have been applied to the construction of CPP-659. No mention is made of the design practices which may not have been applied during the construction of CPP-659. Since the Part B application is for a new facility, current construction codes should be complied with.

No analysis is performed as to what seepage rates or volumes might exist under the maximum postulated overland and riverine flood conditions. Water seepage was observed at CPP-659, but no comprehensive details are provided as to the volume, conditions or the sources or location of

seepage which existed at the time of the observance. Additionally, no statements are offered as to the time of year these leaks were observed. Was it during the dry months of August or wet times of March? Was the seepage observed more than 25 years ago as part of the 1976 Dames and Moore field investigation or is this an observation from a current field investigation?

Water infiltration which could occur from the utility piping is not quantitatively analyzed and the public cannot determine what specific flood devices would be used to route the water to the hot sump tank or the adequacy of the tank to accommodate flood water. Additionally, the facility sumps and pumps capacity data is not provided to document the surge capacity during a 100-year flood scenario. Also, the claims of sump pumps to handle minor inflow are questionable because these pumps were not sized for floods, but rather just for minor drip leaks. What is the life expectancy of carbon steel joints, built in 1977? (EDF, P. 7) These are not stainless steel and rust may be a factor 25 years after construction of CPP-659. (30)

The EDF does not specifically or adequately describe the flood protection devices for which it asserts preclusion from washout of hazardous wastes from the building. The EDF attempts to take claim for "flood protection devices" for pipe or utility penetrations into the walls of CPP-659. (EDF, pp. 1, 2, 3). The EDF does not state the specific flood protection devices nor relate those devices to the types of specific failures which may occur. Nor is there any listing or specific description of flood control devices to reduce the likelihood of erosion and sediment transport at CPP-659.

The adequacy of the VES-NCC-122, the non-fluoride hot sump tank, and a 600 gallon portable tank during peak flood conditions to temporarily hold the volume of water which might enter CPP-659 is not discussed. The accessible/usable volume for VES-NCC-122 is not stated. Tanks which would be utilized to hold water entering from the utility tunnel are not described for their volume. Pumps which would be necessary to transport flood water to other locations are either non-existent or not described. Is there any relation to the 300,000 gallon tanks which can be floated and, due to severed service lines, not available to receive flood water pumped from CPP-659?

VES-NCC-122 and VES-NCC-119 are also linked to the operation of the HLLWE (High Level Liquid Waste Evaporator) operations. VES-NCC-122 and VES-NCC-119 have no RCRA permits and are not included in the Volume 18 application, but "... will be permitted with the HLLWE." (8/28/1998 Volume 18 NOD pp. 14-15, D-ib Container Storage Area Drainage). DOE should not be granted approval of the permit application by IDEQ prior to furnishing the necessary floodplain information as provided for by state and federal law.

There has been no preapplication meeting provided for the public for the HLLWE permit, in violation of the RCRA Expanded Public Participation Rule and 10 CFR 1022.3(e), to provide such a hearing and public review of these proposals for plans and actions in the floodplain. The HLLWE and VES-NCC-122 and VES-NCC-119 operate illegally without any RCRA permit.

The EDF provides no information regarding the ability to carry out sampling activities for water entering the utility tunnel prior to sending the water to the hot sump tank. A 600-gallon tank would hold the water before sampling, but it is not clear if the holding tank would be adequate

for the amount of seepage or flooding entering CPP-659. No information is provided as to how or whether the sampling can even be accomplished under maximum flood conditions. How long will it take to sample the water under maximum flood conditions? Who will perform the duties? Will the flood and/or radiation make access impossible, and to what areas? What are the effects of inability to sample the water and transfer to the hot sump tank without sampling? What is the reliability of grid power and emergency backup generators during a flood if the generators get flooded out?

The asserted protection from seepage from the use of silicon sealant is not adequately described. The locations where silicon sealant will be applied and the basis for ability of the sealant to perform under the extremes of postulated flood conditions is not provided. The amount of seepage into CPP-659 under flood conditions has not been calculated. Additionally, there is no documentation that silicone sealant applied on the inside of the wall or elsewhere, meets current ACI standards. (CCN 23977-July 23, 2001 J. E. Rugg (INEEL) letter to R. E. Bullock (IDEQ).

Water from the tank farm waste pipe would be waste entering the CPP-659 from the tank farm facility which does not have a RCRA permit. In the 8/25/1998 List of Deficiencies (NOD, p.5, C-1b Waste in Tank Systems), it is stated that "... the tank farm is a non-permittable unit." The Response states that the "cease use" date for the tank farm will be moved from 2001 to 2003. The Response further states that a compliance schedule cannot be stated until the Record of Decision for the High Level Waste and Facility Disposition Environmental Impact Statement is issued late 1999. (The ROD for the HLW/EIS has not issued with a development of the preferred option.) RCRA does not permit release of RCRA waste to non-RCRA facilities. The use of the tank farm to receive the release of chemical solutions from the Debris Processing facility is not legal under RCRA.

The tank farm pipe penetrates the inner cell structure. There is no specificity as to what flood protection devices are designed to route water to a sump in the valve cubicle. If one or more 300,000 gallon tanks are floated, as the HLW/EIS states as a possible effect of the 100-year flood, what is the potential impact of such an event on the Debris Processing facility?

There is no analysis provided regarding the current structural integrity of the concrete walls which are below grade. Whether the concrete walls, which are below grade, would allow the entry of flood waters to the CPP-659 from lateral stress, is not determined. No thorough assessment has been made on the effect of soil saturation on the stress to the retaining walls which are above or below grade. The structural design of the actual concrete retaining walls with respect to their height, width and thickness and placement of steel bars to withstand lateral earth pressure under saturated conditions has not been analyzed. As discussed above, only an analysis based on assumed and unsubstantiated structural components is offered. There is no analysis of voids in the concrete. There is no statement as to whether the CPP-659 was poured as a contiguous concrete structure or whether there are seams which may allow entry of flood water at various locations. All concrete structures are designed to allow for expansion/contraction. Joints fitted with carbon steel were apparently not examined for their current integrity.

Nor do the preventative measures cited by the EDF meet ACI requirements to prevent flooding ingress. For, example, the carbon steel may not meet current joint seal requirements and/or the

life expectancy of the steel may have been exceeded given the CPP-659 building was constructed in 1977. This steel issue also can apply to the hatches below, depending on the elevation of the tunnel and the other penetrations. The considerable hydrostatic pressure (water head) is a crucial issue in barriers/sealants. In other words, the deeper below the surface, the larger the head, giving less effective downstream (interior) sealants' protection. The water pressure can cause separation from the substrata to which the sealant is attached, particularly if the concrete is old, wet or crumbly.

Concrete hatches in the maintenance area are a possible pathway for entry of floodwater into CPP-659. While the EDF document (p. 8) asserts that the elevation of the concrete hatches is one foot above the hypothetical one-year flood, the figures used in the HLW/EIS (p. 4-51) would indicate that the one-foot margin of safety does not exist because the flood level at INTEC is 5 or more feet (4917 to 4923 peak elevation) rather than the 4 feet (4916 peak elevation) which the EDF assumes. The analysis also does not take into account the combination with overland flow and/or wind generated surging or waves.

An entire listing of all the doorways and openings for water to enter the CPP-659/1659 has not been provided by the EDF. The study refers to "doorways and other openings". (P. 12). If the HLW/EIS flood water elevation figure of 4917 is utilized, the doorway entry at the north side of CPP-659 would have only a .7 foot clearance, instead of a 1.7 foot clearance claimed by the EDF. There is a large 18 foot 4 inch truck bay door opening on the first floor ground level northwest corner of the building that has an elevations between 4916' 6-1/2" to 4917'-0" (31) (See Attachment H.)

"Typically, waste may be brought into CPP-1659 through one of two doors, a telescoping door (14 x 20 ft.) on the waste end of room 418 and a man door on the south end of CPP-1659. Typically, waste may be brought into CPP-659 through one of two entrances: the vehicle entry way (417) or the unloading dock on the north side of the building into room 428 (see exhibit D-1). Waste is transferred to lower-level areas through hatches in room 418 or 428." (32)

The waste is processed in flood vulnerable below grade levels and the large truck bay door in CPP-659 and the "telescoping" truck doors in CPP-1659 add significantly to the building's flood-water vulnerability. Moreover, if the flood-waters enter the CPP-659, the waste hatches described above will provide a direct route to the below-level waste processing areas.

No analysis of cracking which may exist in the third floor concrete foundation was made by the EDF. The EDF has not considered whether RCRA requirements may exist for double containment liners. Although concrete does not qualify for RCRA containment due to its porosity, DOE still incorrectly attempts to take credit for concrete foundation/cell walls even though there is no stainless steel liner of sufficient height to contain the entire unit's volume required by RCRA for double containment.

The EDF analysis of reduction of erosive forces to the CPP-659 by the presence of unspecified flood control devices is not credible. The EDF has provided no factual basis whatsoever for taking credit for any amount of slowing and diversion to control erosions at CPP-659. No credit can be taken for erosion reduction where there has been no analysis performed of the ability of

unspecified flood control devices to divert water to unspecified storage basins and unspecified roads and unspecified buildings. An IDEQ/INEEL Quarterly Meeting June 8, 2000 Neil C. Hutten document states that "Overland flow hydrology needs to be updated to include new topography, new buildings, and hydrology changes since 1993." Thus, the analysis of the EDF is unreliable with respect to credit taken for erosion control. Furthermore the peak flow volumes, peak flow rates and peak flood water elevation are in dispute. Erosive forces may not be fully considered for debris size, e.g., cobblestones moving at high velocity. (33)

The twenty-five year floodplain analyses which have been performed for INEEL facilities that have containers, tanks and waste piles "need to be evaluated to determine ... whether they need to be updated for current conditions." (IDEQ/INEEL Quarterly Meeting June 8, 2000 Neil C. Hutten). The Debris Processing tanks and containers may not have been assessed from the perspective of the 100 year flood.

No information has been provided in relation to flooding as to whether fires, explosions or sudden releases of hazardous wastes or hazardous constituents or incompatible chemical reactions could occur or result from the 100-year flood. 40 CFR § 270.14(c) (7) (contingency plan) and 40 CFR § 270.14(c) (8) (procedures structures or equipment) have not been addressed by the draft permit in relation to floodplain information. A contingency plan has not been developed which includes the additional hazards and actions facility personnel must take in response to the 100-year flooding. (See, 40 CFR §§ 264.50 through 264.56, 264.52(b), 264.52(d)and (e), 264.55, 264.56(c), 264.56(d), 264.56(j), 264.16(a)(1)and 270.14(b)(7) which sections address a contingency plan, emergency coordinators, notification procedures, hazard assessment, emergency equipment, and training programs.

The closure plan does not take into account the 100-year flood effect on closure cost estimate for the facility. 40 CFR §§ 270.14(b) (15). The closure plan does not address additional problems of decommissioning and decontamination which may result from the 100-year flood. (40 CFR §§264.110 through 264.120, 270.14(b)(13).

Petitioner contends that IDEQ improperly reached a final decision to approve the Part B Permit prior to provision of a reopened public comment period in this matter. IDEQ has again denied the public a full opportunity for comment and response to those comments by IDEQ prior to a decision to issue the permit. In submitting this brief, Petitioner does not waive any challenges which he has raised to the IDEQ Director's jurisdiction to hear this matter.

IV. CONCLUSION

The Floodplain information submitted to IDEQ by DOE is not in compliance with the requirements of the Resource Conservation and Recovery Act, 40 CFR 264.18(b), 40 CFR §270.14 *et seq.*, the Floodplain/Wetlands environmental review requirements of 10 CFR 1022 *et seq.*, and/or the National Environmental Policy Act of 1969. The Idaho Department of Environmental Quality should continue a stay upon approval and issuance of the Volume 18 Part B Permit and stay further construction related to the Debris Processing facility in INTEC CPP-659/1659 building until such time that DOE complies with the above requirements of state and federal environmental law for the Debris Processing facility and other associated facilities which

lie within the floodplain/wetlands at the Idaho National Engineering and Environmental Laboratory.

Petitioner would like to acknowledge technical contribution and review by Chuck Broscious at the Environmental Defense Institute.

Respectfully submitted,

_____ Date: _____

David B. McCoy

Attachments

Attachment A.
Koslow (1986) Figure 6 Inundation map for the 100-year flood piping failure, that shows the flood encompassing the entire CPP, page 22.

Attachment B:
INEEL High-level Waste EIS pg. 1-8, DOE/EIS-02870, photo of INTEC facilities.

Attachment C:
Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13, October 1999, DOE/ID-10660, page 5-2. Figure 5-1: 100-year floodplain at INTEC (USGS 1998).

Attachment D:
INEEL High-Level Waste EIS page 1-8, view of the location of the Debris Processing in the New Waste Calciner Facility, that shows NWCF due east of the main entrance to the INTEC and within the USGS (1998) floodplain footprint, DOE/EIS-0287D.

Attachment E:
INEEL High-Level Waste EIS (DOE/0287D), page 5-207, Table 5.3-23 Summary of facility that shows the CPP-659 New Waste Calciner Facility bounding operations accident as "Flood-induced failure."

Attachment F:
Focused Safety Management Evaluation of the Idaho National Engineering and Environmental Laboratory, January 2001, Office of Independent Environment, Safety, and Health Oversight Environment, Safety and Health, U.S. Department of Energy, pages 25, 26, and 50.

Attachment G:
Roland, John, PG, Hasemeier, Robert, PE, Gannet Fleming Inc., Memorandum to Wayne Pierre, EPA, Site Visit: INEEL ICDF construction, October 25, 2001.

Attachment H:
1st. Level Floor and [Foundation] FDN Plan Decontamination Area New Waste Calcine Facility, Drawing No. 1495-CPP-659-C-314, Fluor Construction, Los Angeles, CA for U.S. Energy [Research and Development] R&D Administration (predecessor to Department of Energy), 1977. Drawing is also numbered 132465.

Attachment I:
Newspaper clippings from the Mackay Miner, June 22, 1933, June 29, 1933, July 6, 1933, July 27, 1933. Photo of dynamited head-gate of Mackay Dam.

End Notes

1. Koslow, K.N., Van Haaften, D.H., Flood Routing Analysis for a Failure of Mackay Dam, June 1986, EG&G Idaho Inc. Prepared for the U.S. Department of Energy, Idaho Operations Office, page 9. Hereinafter referred to as Koslow (1986).

2. Mackay's Yesterdays, p. 92, Georgia Olsen, Printed by the Arco Advertiser, 1978.

3. "First, a tentative hypothesis may be made that Mackay Dam may be overtopped and fail due to floods of not much greater recurrence interval than that of the maximum floods considered in the paper [15 to 300-year recurrence intervals]." Carrigan, P.H., Jr., Probability of Exceeding Capacity of Flood-Control System at the National Reactor Testing Station, Idaho, U.S. Geological Survey, Open-File Report, TID-4500, January 1972, pg. 18, IDO-22052.

4. Koslow (1986), page 1, citing, State of Idaho, Department of Water Resources, Phase I Inspection Report, National Dam Safety Program, Mackay Dam, September 1978.

5. June 22, 1933, Mackay Miner newspaper.

6. Koslow (1986) page 26

7. Department of Energy Programmatic Spent Nuclear Fuel Management and INEEL Environmental Impact Statement, Vol.2, Part A, page 2.2-23, April 1995, DOE/EIS-0203F. Hereinafter referred to as INEEL Site-Wide EIS.

8. "The need for flood control at the INEL [sic] has been recognized since the early 1950's when the Test Reactor Area and the Idaho Chemical Processing Plant were threatened by localized flooding that occurred because of ice dams in the Big Lost River." "Repeated threats of flooding in the late 1960's, early 1970's, and early 1980's occurred when the Big Lost River filled Playas 1 and 2 and overflowed into Playa 3 near the Loss-of-Fluid Test facility. High stream-flow and air temperatures as low as -47 degrees F in the winter of 1983-84 caused ice jams that imposed a danger of localized flooding." (Bennett, C.M., Capacity of the Diversion Channel Below the Flood-Control Dam on the Big Lost River at the Idaho National Engineering Laboratory [sic], Idaho, U.S. Geological Survey, Report 86-4204, October 1986, page2.)

9. 1/18/2001 Response to the Department of Environmental Quality Request for Additional Floodplain Information for Units Defined in the Volume 18 HWMA/RCRA Part B Permit Application for the Idaho National Engineering and Environmental Laboratory, "Response" -- also referred to hereinafter as Engineering Design File (EDF-1747) or EDF.

10. CCN 00-010826- 7/6/2000 Compliance Schedule for Volume 18-Floodplain Requirements.

11. USGS (1998) page 6

12. Koslow (1986) page 26, table 7

13. Idaho High-Level Waste and Facilities Disposition Draft Environmental Impact Statement, December 1999, page 4-51, DOE/EIS-0207D, hereinafter referred to as HLW/EIS. Also see, Department of Energy Programmatic Spent Nuclear Fuel Management and Idaho

14. The four scenarios are: 1.Seismic failure of the dam, coincident with the 25-year recurrence interval flood; 2. Hydraulic (piping) failure of the dam, with the 100-year recurrence interval flood; 3. Hydraulic (piping failure), with the 500-year recurrence interval flood; and 4. Overtopping failure caused by the probable maximum flood (PMF) (#4 scenario is used in the HLW/EIS). Scenarios 1, 2 and 3 assumed a failure time of over one hour. This is a significant factor related to flood elevations downstream from the dam due to longer release duration of the Mackay Dam backwaters. The fourth Mackay Dam failure assumes a near immediate Mackay Dam failure due to overtopping, and a trapezoid opening of the dam. "The PMF represents the hypothetical flood that is considered to be the most severe flood event reasonably possible, based on hydrologic factors." "The PMF is based on the maximum potential for critical hydrometerological conditions to occur, not on probabilities or historical flood frequencies." (Koslow, p.14).

15. Federal Emergency Management Agency: Reducing Risk Through Mitigation. www.fema.gov/mit/idf_iiib.htm

16. Roland, John, PG, Hasemeier, Robert, PE, Gannet Fleming, Inc., Memorandum to Wayne Pierre, Environmental Protection Agency, Region 10, Site Visit: INEEL ICDF construction, October 25, 2001, page 2.

17. USGS (1998) citing Shearman, J.O. 1990, Users' manual for WSPRO - a computer model for water surface profile computations: U.S. Department of Transportation, 177 p., report No. FHWA-IP-89-027.

18. Kjelstrom, L.C, Berenbrock, C., Estimated 100-Year Peak flows and Flow Volumes in the Big Lost River and Birch Creek at the Idaho National Engineering Laboratory, Idaho, U.S. Geological Survey, Water Resources Investigations Report 96-4163, p. 9, 1996.

19. Berenbrock,C., Kjelstrom L.C., Preliminary Water-Surface Elevations and Boundary of the 100-Year Peak flow in the Big Lost River at the INEEL, U.S. Geological Survey, Water Resources Investigations Report 98-4065, DOE/ID-22148. Hereinafter referred to as USGS (1998)

20. USGS (1998) page 9

21. USGS (1998) page 8 to 10

22. INEEL 7/6/00 letter to R.E. Bullock IDEQ, subject: Compliance Schedule for Volume 18 - Flood-plain Requirements: Attached: Flood plain Requirements for the Volume 18 of the RCRA Part B Permit Application for the INEEL - Compliance Schedule, page 1.

23. Koslow (1986) page B-22

24. Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-19, October 1999, DOE/ID-10660. Herein after referred to INTEC ROD. Also see INTEC Remedial Investigation and Feasibility Study (INEEL-95/0056 page 162) that shows strontium-90 contaminate plumes at 516,000 pCi/L (CPP well # MW-2) and 110,000 pCi/L (CPP well # MW-5). The EPA established maximum concentration level for strontium-90 is 8 pico curies per liter (pCi/L).

25. National Environmental Policy Act of 1969, as amended (42 USC § 4321 et seq.) Also see 10 CFR Part 1021, Clean Air Act, as amended (42 USC § 7401 et seq.), The Clean Water Act, as amended (33 USC § 1251 et seq), The Safe Drinking Water Act, as amended (42 USC § 300f et seq.), Resource Conservation Recovery Act, as amended (42 USC § 6901, et seq.), Federal Facilities Compliance Act, Comprehensive Environmental Response, Compensation, and Liability Act, as amended (42 USC § 9601 et seq.), Emergency Planning and Community Right to Know Act of 1986 (42 USC ss 11001 et seq.), Toxic Substances Control Act (15 USC § 2601 et seq.), Pollution Prevention Act of 1990 (42 USC § 13101 et seq.), Executive Order 11990 and 11988 (Floodplain Management) that require Federal agencies to establish procedures to ensure that the potential effects of flood hazards and floodplain management are considered for any action undertaken in a floodplain and that floodplain impacts be avoided to the extent practicable. DOE Order 5400.1, General Environmental Protection Program requires compliance with applicable Federal, State, and local environmental protection laws and regulations as well as internal DOE policies.

26. Focused Safety Management Evaluation of the Idaho National Engineering and Environmental Laboratory, U.S. Department of Energy, Office of Independent Environment, Safety, and Health Oversight, January 2001, page 25 and 50.

27. Preliminary Design Report for the [ICDF] Staging, Storage, Sizing, and Treatment Facility (Draft), section 1.1, December 1, 2000, DOE/ID-10825. "All SSSTF activities shall take place within the WAG-3 area of contamination (AOC) to allow flexibility in managing the consolidation and remediation of wastes without triggering Land Disposal Restrictions (LDR's) and other RCRA requirements, in accordance with the OU-3 ROD."

Also see, Comprehensive Remedial Investigation/Feasibility Study, ICPP OU3-13, Part B, FS Supplement Volume 2, October 1998, DOE/ID-10619. "Materials removed from CERCLA activities within the INTEC facility fence and disposed in the ICDF will be within the AOC. Therefore, these CERCLA generated materials can be disposed at the ICDF without triggering placement or RCRA land disposal restrictions. Materials generated on the INEEL from CERCLA activities outside of the WAG 3 AOC would be subject to substantive requirements of RCRA, including LDR treatment and disposal restrictions." page C-6.

28. USGS (1998) page 6

29. McHugh,J.A., Knief, R.A., and Robkin, M.A., Nuclear Criticality Safety Issues Pertaining to the INEEL [Subsurface Disposal Area] SDA, U.S. Environmental Protection Agency Region 10, May 3, 2000, page 2. Also see, EPA 1/25/01 letter to K.E. Hain, DOE/ID, Comments on Subsurface Disposal Area Nuclear Criticality Issues Meeting Minutes, 12/6-8/00.

30. Also see INEEL Response to IDEQ Comments (5/18/01) comment #4 that provides an inadequate response. "The pump identified in the previously submitted EDF is located in the utility tunnel which is outside the foundation wall of Building CPP-659. No pump is used within Building CPP-659 to transfer seepage water, and the application of the sealant will prevent seepage through the pipe penetrations. Therefore, no pump capacity information nor engineering certification is required." With the tunnel at the bottom of the third level (34' below the surface and a flood level of an additional four feet) considerable hydrostatic pressure will be on the silicone sealant and other pipe barriers in CPP-659. DOE is obliged to offer certified engineering approval of this tenuous silicone barrier as well as the sump pump capacities should the silicone fail.

31. 1st. Level Floor and [Foundation] FDN Plan Decontamination Area New Waste Calcine Facility, Drawing No. 1495-CPP-659-C-314, Fluor Construction, Los Angeles, CA for U.S. Energy R&D Administration, 1977. Drawing is also numbered 132465.

32. RCRA Part B Application for the INEEL, Volume 18 Idaho Nuclear Technology and Engineering Center Book 2, March 1996, USDOE, DOE/ID-10131, page D-18.

33. See Memorandum fn. 14, supra, "The implication of the presence of these fist sized sediments is that the Big Lost River has, in its past, produced high energy environments of erosion and deposition in the area of the present landfill excavation. The river would have to have left its current channel and carved through the adjacent over bank deposits with sufficient force to carry and then deposit cobbles greater than 3 to 4, and some up to 6 inches, in diameter. Significant water volumes and velocities are required to produce high energy deposits comprised of gravels and cobbles of this size range."