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NMWMP - Hanford

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Phil Staats
Washington State Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336-6018

Dear Mr. Staats:

As a school project I had to do a position paper. I chose to do something about the Hanford Site. As I was researching Hanford issues I decided to do it on the Remedial Actions at 100-N Area. In developing my position I reviewed a number of environmental and groundwater reports. In addition I reviewed DOE/RL-93-23 N Springs Expedited Response Action Proposal United States Department of Energy, Richland, Washington and DOE/RL-95-110 N-Springs Expedited Response Action Performance Evaluation Report, United States Department of Energy, Richland, Washington. What I discovered in reviewing these documents was that the Pump-and-Treat system was not as efficient as Natural decay. How can you justify continuation of the Pump-and-Treat system at 100-N with only .1 curie removal through Pump-and-Treat and Natural attenuation Remediation removing 2.2 curies per year as pointed out in the above documents. 33889 45019

In evaluating a number of Hanford Annual environmental reports it appears for 1996 the dose from $^{90}Sr$ was .0018 mrem per year. Which equates to 126 person mrems for the Tri-Cities. The government is spending $1,374,000,000,000.00 per mrem reduction (i.e., .062 Ci/yr flux reduction) or about 20 million dollars per person mrem reduction. Are these costs per mrem or person mrem reductions justified? In my review of cost benefit ALARA Analysis - numbers of ten thousand dollars per mrem reduction is what I remember being justified. Please provide references to dose reductions that justify this level of spending for such a small dose reduction.

My specific comments are enclosed.

Sincerely,

Amy Hildebrand

Amy Hildebrand

Comments on Proposed Plan for Interim Remedial Action and Dangerous Waste Modified closure of the Treatment, Storage, and Disposal Units and Associated Sites in the 100-NR-1 Operable Unit (DOE/RL-97-30 Rev.0).

Page 2-3, 120-N-1 and 120-N-2 TSD's:

Respectfully request Ecology delete TSD's 120-N-1 and 120-N-2 from this continued monitoring as a modified RCRA/CERCLA closure plan and provide a plan that is reflective of the current conditions of clean closure of TSD sites 120-N-1 and 120-N-2. Ecology and DOE provide only an inventory of acid or caustic liquids that where deposited at these sites. The documentation says nothing was detected in the soil samples - therefore the site is clean. No inventory of sulfite metals or other chemicals are provided. The elevated sulfate observed in the groundwater are probably the result of discharging Sulfuric Acid and is not of major concern or major health problem for the concentration observed. The water will still meet general house hold and irrigation uses (Davis and DeWiest, Hydrogeology). The elevated Sulfate will only provide an odor or taste that is not harmful. I respectfully request that the money currently being spend on RCRA groundwater monitoring of 120-N-1 and 2 be refocused to something more constructive like removing 1500 drums of uranium and oil in the 300 Area.

Page 2-3, 116-N-1, 116-N-3, and UPR-100-N-31, As is provide in DOE/RL-96-39 the modeling preformed indicates that $^{90}$SR will not significantly reach the Columbia River. And as was provided in earlier analysis more remediation of $^{90}$Sr occurs through natural attenuation than through pump and treat system (i.e., .1 Ci remove from pump and treat and 2.2 Ci from natural attenuation- decay). The natural attenuation provides 96% of the $^{90}$Sr remediation in the 100-N Area - Ecology and DOE need to explain why such efforts are being taken to expend such monetary resources for such little return of 5% of the $^{90}$Sr - it will still take 270-300 years potentially to remediate this site with either of these two technologies? Respectfully request the cessation of the 100 N Area expenditure on pump and treat of $1,000,000.per year and refocus the money on solving the 200 Area Carbon tetrachloride plume which is of real concern as demonstrated in BHI's model predictions of contaminant plumes (BHI-00608 and BHI-00469) and is observed by the rate of spreading in the Annual groundwater reports (i e., 1997, 1996, 1995, 1994). With the current pump and treat and further analysis there appears to be a 2.55 Ci per year contribution to the Columbia River as calculated from the 1996 average $^{90}$Sr in the Columbia River and average flow of 4500 cubic meters per second (Table Annual Average Sr-90 Dose) and not the claimed .062Ci/yr flux. Request Ecology reconcile these differences in Flux.

Provide the cost estimate for the Barrier Wall - Passive Remedial action. The earlier analyses are missing from these current documents. Ecology's earlier estimate demonstrated pump and treat cost approximately $300,000,000. more that the Barrier Wall which makes Pump and treat less effective.

The current approach of putting out these four documents (DOE/RL-96-102, DOE/RL-97-30, DOE/RL-96-39, and DOE/RL-95-111) is very confusing. Request Ecology and DOE provide one single document that provides a clear plan for Remedial Actions for 100 N Area. It is very unclear what was evaluated and against what to determine what is the right approach to remediate groundwater at 100 N Area. In reviewing these documents it appears previous analysis are not now consider. Please provide the detail written analysis that has lead Ecology to the recommended alternative on continued pump and treat.

# TABLE ANNUAL AVERAGE Sr-90 DOSE

| PR_RPH_MEANS | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Sr-90 ANNUAL AVERAGE | | | | | | | | | | | | |
| 2 | | | | | | River Fl | River Flow | River Flow | River Flow | River Flow | River Flow | pCi/yr | Ci/yr |
| 3 | YEAR | PR | RPH | | RPH-PR | m^3/s | m^3/min | m^3/hr | m^3/day | m^3/yr | L/yr | intake | intake |
| 4 | | | | | | | F6*60 sec/min | G6*60 min/hr | H6*24 hrs/day | I6*365.25 days/yr | J6*1000 L/yr | E6*k6 | I6/10^12 pCi/ci |
| 5 | | | | | | | | | | | | | |
| 6 | 1988 | 0.1 | 0.12 | | 0.02 | 2830 | 169800 | 10188000 | 244512000 | 89308008000 | 89308008000000 | 1.78616E+12 | 1.78616016 |
| 7 | 1989 | 0.08 | 0.07 | | -0.01 | 2815 | 168900 | 10134000 | 243216000 | 88834644000 | 88834644000000 | 0 | 0 |
| 8 | 1990 | 0.07 | 0.08 | | 0.01 | 3838 | 230280 | 13816800 | 331603200 | 121118068800 | 1.211180688E+14 | 1.21118E+12 | 1.211180688 |
| 9 | 1991 | 0.09 | 0.09 | | 0 | 3990 | 239400 | 14364000 | 344736000 | 125914824000 | 1.25914824E+14 | 0 | 0 |
| 10 | 1992 | 0.09 | 0.09 | | 0 | 2860 | 171600 | 10296000 | 247104000 | 90254736000 | 90254736000000 | 0 | 0 |
| 11 | 1993 | 0.09 | 0.08 | | -0.01 | 2580 | 154800 | 9288000 | 222912000 | 81418608000 | 81418608000000 | 0 | 0 |
| 12 | 1994 | 0.09 | 0.09 | | 0 | 2673 | 160380 | 9622800 | 230947200 | 84353464800 | 84353464800000 | 0 | 0 |
| 13 | 1995 | 0.08 | 0.085 | | 0.005 | 3208 | 192360 | 11541600 | 276998400 | 101173865600 | 1.011736658E+14 | 5.05868E+11 | 0.505868328 |
| 14 | 1996 | 0.079 | 0.097 | | 0.018 | 4500 | 270000 | 16200000 | 388800000 | 142009200000 | 1.420092E+14 | 2.55617E+12 | 2.5561656 |
| 15 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | |
| 17 | | | | | | | | | | TPA CLEANUP STD | | | |
| 18 | | | | | | | | Tri-City Population | | 15 mrem | | | |
| 19 | | | | | | Dose | 80 KM | Drinking wate current | | | | | |
| 20 | YEAR | PR | RPH | | RPH-PR | mrem/y | population | river | person-mrem | person-mrem | | | |
| 21 | | | | | (C23-B23)= | (4*E23)/40 | | | (F23*h23)= | 1050000 | | | |
| 22 | | | | | | | | | | | | | |
| 23 | 1988 | 0.1 | 0.12 | | 0.02 | 0.002 | 340943 | 70000 | 140 | 1050000 | | | |
| 24 | 1989 | 0.08 | 0.07 | | -0.01 | -0.001 | 340943 | 70000 | 0 | 1050000 | | | |
| 25 | 1990 | 0.07 | 0.08 | | 0.01 | 0.001 | 380000 | 70000 | 70 | 1050000 | | | |
| 26 | 1991 | 0.09 | 0.09 | | 0 | 0 | 380000 | 70000 | 0 | 1050000 | | | |
| 27 | 1992 | 0.09 | 0.09 | | 0 | 0 | 380000 | 70000 | 0 | 1050000 | | | |
| 28 | 1993 | 0.09 | 0.08 | | -0.01 | -0.001 | 380000 | 70000 | 0 | 1050000 | | | |
| 29 | 1994 | 0.09 | 0.09 | | 0 | 0 | 380000 | 70000 | 0 | 1050000 | | | |
| 30 | 1995 | 0.08 | 0.085 | | 0.005 | 0.0005 | 380000 | 70000 | 35 | 1050000 | | | |
| 31 | 1996 | 0.079 | 0.097 | | 0.018 | 0.0018 | 380000 | 70000 | 126 | 1050000 | | | |
| 32 | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | |
| 34 | | | Using Figure 6-8 of DOE/RL-95-110 | | | | | | | | | | |
| 35 | | | Current Pump&treat .023 Ci/yr to Columbia River | | | | | | | | | | |
| 36 | | | .062 Ci/y reduction to River | | | | | | Oper $ $1,000,000 | | | | |
| 37 | | | | | | | | | | | person-mrem | Operating Cost | |
| 38 | | | ( .062 Ci/Yr * 1E12 pCi/Ci)/(G11*1000*60 s/m *1440 m/d *365.25 d/y)=pCi/l addition Sr-90 to River | | | | | | | | 70,000 population | $1,000,000 | |
| 39 | | | Ci/yr reduction | | | | | | | | | | |
| 40 | 1993 | | 0.00001269 pCi/l Sr-90 addition to River | | | 0.000001269 | mrem/y | | $787,922,012,903 | $/mrem reduction | 0.0888412797887 | $11,256,029 | $/person-mrem re |
| 41 | 1994 | | 0.00001225 pCi/l Sr-90 addition to River | | | 0.000001225 | mrem/y | | $816,323,852,903 | $/mrem reduction | 0.0857502812775 | $11,661,769 | $/person-mrem re |
| 42 | 1995 | | 0.00001021 pCi/l Sr-90 addition to River | | | 0.000001021 | mrem/y | | $979,099,989,677 | $/mrem reduction | 0.0714942301481 | $13,987,143 | $/person-mrem re |
| 43 | 1996 | | 0.00000728 pCi/l Sr-90 addition to River | | | 0.000000728 | mrem/y | | $1,374,282,580,645 | $/mrem reduction | 0.0509356670788 | $19,632,608 | $/person-mrem re |

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