4A100

CORRES. CONTROL
LTR. NO.
Originator Ltr Log #
JEL-178-98
97 - RF -

DIST.	LTR	ENC
BENSON, C.A.		
CARMEAN, C.H.		
CRAWFORD, A.C.		
DAWSON, D.		
EDWARDS, J.D.		
FINDLEY, M.E.		
FITZ, R.C.		
GUINN, L.A.		
HUGHES, F.P.		
REED, A.B.		
TYSON, A.M.		
WAGNER, M.J.		
WHEELER, M.		
DiGregorio, G	✓	
Fuker, S	✓	
Sproles, W	✓	
RMRS RECORDS	X	✓
w/o IDM4.mdb		
RF CORRES. CONTROL		
TRAFFIC		
PATS/T130G		

CLASSIFICATION:

UCNI		
UNCLASSIFIED		
CONFIDENTIAL		
SECRET		

AUTHORIZED CLASSIFIER SIGNATURE:

Date: 10-29-98

IN REPLY TO RF CC NO.:

ACTION ITEM STATUS:
PARTIAL/OPEN
CLOSED

LTR APPROVALS:

ORIG. & TYPIST INITIALS:
RSL:AW

RF-46469(Rev.1/97)

MRS Rocky Mountain Remediation Services, L.L.C.
. . . protecting the environment
Flats Environmental Technology Site
ox 464
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000101387

October 29, 1998

Colburn Kennedy
Waste & Remediation Operations
Building 130
Kaiser-Hill, L.L.C.

INVESTIGATIVE DERIVED MATERIAL (IDM) DRUMS & SUPPORTING DATA FOR BACKFILLING THE T-1 TRENCH - JEL-178-98

The purpose of this letter is to supplement the information contained in my last correspondence (JEL-175-98) regarding placement of IDM in Trench 1. In addition to the 977 drums specifically listed for backfilling in the last correspondence, additional drums were researched that fell into the following categories:

IDM drums with Volatile Organic Compounds (VOC) results but no radiological analyses (750 drums):

- Locations were overlaid with plutonium isopleths to determine qualitative probability of radiological contaminant presence (Figure 1).
- Boreholes/well locations were reviewed by Subject Matter Experts (SME) for potential radionuclide presence.

IDM drums with radiological results but no VOC analyses (135 drums):

- Uranium isotopic results were reverified due to the proximity to OU-5.
- Boreholes/well locations were reviewed by SMEs for potential VOC contaminant presence (Figure 2).
- Locations were overlaid with VOC groundwater plume isopleths to determine the qualitative probability of VOC presence.

Based on these evaluations, the drums listed in Tables 1 and 2 are recommended for backfill in Trench-1. The drums listed in Table 3 were disqualified. The rationale for these recommendations is described below.

All drums contained in Table 1 were derived from the locations in Figure 1 that are outside the 50 pCi/g area, i.e., from locations where surface concentrations are less than 50 pCi/g. Recall that maximum actinide concentrations are historically at the surface (~90% of activity is within the top 2" of soil), with concentrations decreasing in depth -- well below the RFCA Tier II action level of 212 pCi/g for $^{239,240}Pu$. Therefore, drum contents that correlate to these locations are likely to have lower actinide concentrations than those indicated by the associated isopleth values. Drums/locations shown as "disqualified" in Table 3 were in areas greater than 50 pCi/g.

ADMIN RECORD

1/8

-I108-A-00078

All drums contained in Table 2 were derived from the locations in Figure 2 that are outside the "100x MCL" area, i.e., from locations where surface plutonimum concentrations are less than 100x MCLs. Note that the plume values represent groundwater concentrations whereas drum contents consist of soils at the listed locations and not the groundwater plume. Based on locations of the plume sources, soil concentrations above the plumes are likely less than concentrations in the plume.

The attached data set (IDM4.mdb, an MS ACCESS file) contains two final correlation tables "d-pass-VOC-detailT" and "d-pass-Rad-detailT," both of which were derived from the master data set "oct19pull" taken directly from the RMRS Soil/Water Database (SWD). The tables constitute reports, or "cross-walks," that correlate IDM drums with locations, samples, analytes, and results. Consistent with the previous table of 977 drums, the enclosed final correlation tables were derived through queries that filtered the data relative to the following parameters or processes:

- Solid matrices only (i.e., soils, no liquids).
- Omission of any Rejected data (per the RFETS data validation process).
- Comparison of ALL sample results w/ RFCA Action Levels, to ensure disqualification of drums not appropriate for return to the trench.
- Sorting by DRUM identification number, in ascending order.

In summary, the drums with analytical and radiochemistry results listed in the attached database (IDM4.mdb) are acceptable for "put-back" into Trench-1 based on the data evaluations described above. The limited results coupled with other site environmental data indicate that the associated drum contents are suitable for put-back into Trench-1. Drums in Table 1 have VOC results related to the IDM that do not exceed RFCA Action Levels; where all VOC results, for the contaminants of concern listed below, were individually compared with RFCA Action Levels to determine acceptance or rejection of each individual drum. Drums were considered acceptable where 1) analytical results existed for the drum, AND 2) the associated results were below RFCA Tier II action levels (note: only Tier I Action Levels were available for VOCs in solids -- Tier II action levels have yet to be established). Acceptance criteria for drums/data results are given below. Likewise, drums in Table 2 have actinide results related to IDM that do not exceed RFCA Action Levels.

PASS/FAIL CRITERIA

RADIONUCLIDES (Rads)
(Table ES-1, Tier II Soil Action Levels {Industrial Area Office Worker}, RFCA Attachment 5, October 31, 1996)

	Solids (pCi/kg)
U-233,234	307
U-235	24
U-238	103
Pu-239,240	252
Am-241	38

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VOLATILE ORGANIC COMPOUNDS (VOCs)
(Table 4, Tier I Subsurface Soil Action Levels, RFCA Attachment 5, July 19, 1996)

	Solids (ug/kg)
Tetrachloroethene (PCE)	11,500
Trichloroethene (TCE)	9,270
Carbon Tetrachloride (CCl_4)	11,000

Note that significant figures in the tables, unaltered from the database source, should generally be limited to a resolution of 0.01 pCi/g for isotopic results and 0.005 mg/kg for VOCs.

Current status on dispositioning of the IDM drums is as follows:

Drums Recommended for Placement in Trench 1:

- 977 drums with both radiological and VOC results below RFCA Action Levels (see JEL-175-98).
- 502 drums with VOC results below RFCA Tier 1Action Levels that correlate to locations likely to have actinide concentrations less than 50 pCi/g (Table 1).
- 122 drums with radiological data below RFCA Tier II Action Levels that correlate to locations likely to have VOC concentrations less than 100x MCLs. (Table 2).

Overall Project Status:

- 1,601 drums are acceptable for return to the trench.
- 261 drums have been rejected based on associations to locations.
- Approximately 638 drums remain to be correlated to sample results.

As stated in my previous correspondence, we will continue to investigate potential links for the 638 remaining drums up to 40 hours of effort.

If you have additional questions or concerns please contact me at extension 4842.

John E. Law
Director
Closure Management Division

RSL/aw

Attachments:
As Stated

cc:
Lane Butler w/o IDM4.mdb
Tom Greengard w/o IDM4.mdb
Alan Rodgers w/o IDM4.mdb

DRUM	DRUM	DRUM	DRUM	DRUM	DRUM	DRUM
1262	3240	3324	3465	3597	4067	675
1263	3241	3325	3466	3598	4068	682
1264	3244	3326	3473	3602	4069	684
1265	3245	3327	3474	3603	407	686
1266	3246	3328	3475	3604	4070	693
1267	3247	3329	3476	3605	4208	698
1268	3248	3330	3477	3610	4209	715
160	3249	3331	3478	3611	4210	731
171	325	3332	3479	366	4211	805
176	3250	3333	348	3664	4212	806
180	3251	3342	3480	3665	4214	807
184	3252	3343	3481	3666	429	808
187	3253	3344	3482	3667	431	809
203	3258	3345	3483	368	443	810
204	3259	3346	3484	370	444	815
206	3260	3347	3485	372	447	816
208	3261	3348	3486	379	450	817
209	3262	3349	3487	3814	452	818
211	3263	335	3488	3815	453	819
212	3264	3350	3489	3816	454	820
223	3265	3351	349	3817	456	821
226	3266	3352	3490	3818	457	823
228	3267	3357	3503	3819	460	824
2310	3268	3358	3504	3822	462	825
2311	3269	3359	3505	3824	464	826
2312	327	3360	3506	3826	465	827
2313	3270	337	3507	3827	466	828
2317	3271	3374	3508	3828	467	829
2318	3272	3375	3509	3850	469	830
2319	3273	3376	3510	3851	473	831
232	3274	3377	3511	3852	475	832
2320	3275	3378	3512	3853	478	833
2321	3276	3379	3537	3854	480	834
2322	3277	338	3538	3855	490	835
2323	3278	3380	354	3860	497	836
2324	3279	3381	3540	3861	498	837
2329	328	3382	3541	3862	500	838
233	3280	3383	3542	3863	501	841
234	3281	3384	3543	3864	504	842
2422	3282	3385	3544	3865	510	843
2423	3283	3386	3545	3866	518	844
2424	3284	3387	3546	3867	519	845
246	3289	3388	3547	3868	524	858
2608	3290	3389	3548	3871	527	859
2609	3291	3390	3549	3872	530	860
2615	3292	3391	3550	3873	542	941
2616	3293	3392	3555	3874	546	942
2642	3294	3393	3556	3879	551	944
2643	3295	340	3557	3880	553	949
2644	3296	341	3558	3881	560	950
265	3297	3412	3559	3882	562	951
279	3298	3413	356	3883	571	960
280	3299	3414	3560	3884	575	
283	3300	3423	3569	3885	576	
292	3305	3424	3570	3886	581	
3126	3306	3425	3571	3887	587	
3127	3307	3426	3572	3888	594	
3194	3308	3427	3573	389	597	
3195	3309	3428	3574	390	600	
3196	331	3429	3575	3900	607	
3197	3310	3430	3576	3901	609	
320	3311	3431	3577	3902	611	
3207	3312	3432	3580	3903	612	
3208	3313	3433	3581	3906	615	
321	3314	3434	3582	3907	616	
3214	3315	3435	3583	3908	625	
3215	3316	3436	3584	3909	627	
3216	3317	3437	3585	3910	642	
3217	3318	3438	359	3911	650	
3234	3319	3439	3591	3926	651	
3235	332	344	3592	3927	654	
3236	3320	3440	3593	393	658	
3237	3321	3462	3594	395	661	
3238	3322	3463	3595	396	673	
3239	3323	3464	3596	401	674	

Table 1. Drums w/ VOC results, no Rads, acceptable for return to Trench-1.

DRUM	DRUM	DRUM
2275	3075	3176
2276	3076	3177
2277	3085	3178
2278	3086	3179
2279	3087	3180
2280	3088	3181
2281	3089	3182
2282	3090	3183
2283	3095	3184
2284	3096	3185
2285	3098	3186
2286	3099	3187
2289	3100	3188
2290	3101	3189
2291	3102	3198
2296	3107	3199
2297	3108	3200
2299	3109	3201
2300	3110	3202
2302	3131	3209
2303	3132	3210
2305	3133	3211
2306	3134	3212
2307	3135	3242
2308	3136	3243
2826	3137	3622
2827	3138	3673
2895	3140	3674
2908	3141	3675
2909	3143	3676
2910	3161	3677
2911	3162	3678
2912	3164	3679
2913	3169	3770
3058	3170	3771
3059	3171	3772
3060	3172	3782
3062	3173	3783
3068	3174	3784
3069	3175	3785
3070		3799

Location	DRUM	Location	DRUM	Location	DRUM	Location	DRUM
11791	481	21393	3337	22193	3445	22393	2839
12091	644	21393	3338	22193	3446	22393	2840
12091	670	21393	3339	22193	3447	22393	2841
12291	710	21393	3340	22193	3448	22393	2842
12291	718	21393	3341	22193	3449	22393	2851
12291	719	21393	3394	22193	3450	22393	2853
12991	1006	21393	3395	22193	3451	22393	3587
12991	1007	21393	3396	22193	3467	22393	3588
12991	1008	21393	3539	22193	3468	22393	3589
12991	1009	21493	3407	22193	3469	22393	3590
12991	977	21493	3416	22193	3470	22393	3623
12991	990	21493	3417	22193	3471	22393	3630
12991	991	21493	3418	22193	3472	22393	3631
13491	1443	21493	3441	22193	3495	22393	3632
13491	1445	21493	3442	22193	3496	22393	3637
13491	1448	21493	3443	22193	3497	22393	3661
13491	1451	21493	3444	22193	3498	22393	3662
13491	1452	21493	3456	22193	3499	22393	3663
13491	1502	21493	3457	22193	3500	22393	3669
13491	1503	21493	3458	22193	3501	22393	3670
13491	1504	21493	3459	22193	3502	22393	3671
13491	1505	21493	3460	22193	3513	22393	3672
13591	1527	21493	3461	22193	3514		
13591	1545	21493	3525	22193	3515		
13591	1567	21493	3526	22193	3516		
13591	1569	21493	3527	22193	3517		
13591	1570	21493	3528	22193	3518		
13591	1571	21493	3529	22193	3519		
21293	2847	21493	3530	22193	3520		
21293	2848	21493	3531	22193	3521		
21293	2849	21493	3532	22193	3522		
21293	2850	21493	3533	22193	3523		
21293	3612	21493	3535	22193	3524		
21293	3613	21593	3370	22193	3561		
21293	3614	21593	3371	22193	3562		
21293	3615	21593	3372	22193	3563		
21293	3616	21593	3373	22193	3564		
21293	3617	21593	3398	22193	3565		
21293	3618	21593	3399	22193	3566		
21293	3620	21593	3400	22193	3567		
21293	3649	21593	3401	22193	3568		
21293	3650	21593	3404	22293	2833		
21293	3689	21593	3405	22293	2834		
21293	3691	21593	3406	22293	2835		
21393	3190	21593	3491	22293	2836		
21393	3191	21593	3492	22293	2837		
21393	3192	21593	3493	22293	2838		
21393	3193	21593	3494	22293	2863		
21393	3203	21593	3551	22293	2864		
21393	3204	21593	3552	22293	2865		
21393	3205	21593	3553	22293	2866		
21393	3206	21593	3554	22293	2867		
21393	3218	21593	3606	22293	2868		
21393	3219	21593	3607	22293	2869		
21393	3220	21593	3608	22293	2870		
21393	3221	22093	3690	22293	3536		
21393	3222	22093	3692	22293	3619		
21393	3223	22093	3693	22293	3633		
21393	3224	22093	3694	22293	3634		
21393	3225	22093	3695	22293	3635		
21393	3226	22093	3696	22293	3636		
21393	3227	22093	3697	22293	3681		
21393	3228	22093	3710	22293	3682		
21393	3229	22093	3711	22293	3683		
21393	3254	22093	3712	22293	3720		
21393	3255	22093	3736	22293	3721		
21393	3256	22093	3747	22293	3722		
21393	3257	22093	3748	22293	3728		
21393	3301	22093	3749	22293	3729		
21393	3302	22093	3750	22293	3730		
21393	3303	22093	3751	22293	3731		
21393	3304	22093	3752	22293	3735		
21393	3334	22093	3766	22393	2821		
21393	3335	22093	3767	22393	2822		
21393	3336	22193	3397	22393	2823		

Table 3. Disqualified IDM Drums, sorted by Location.

Figure 1

IDM Drums with VOC Results (No Rad) Less than RFCA Action Levels Overlaid by PU-239/240 Isoploths (pCi/g)

EXPLANATION

- Borehole Location
- Groundwater Wells
- 0.1 - 1.0 pCi/g
- 1.0 - 5.0 pCi/g
- 5.0 - 10.0 pCi/g
- 10.0 - 50.0 pCi/g
- 50.0 - 100.0 pCi/g
- 100.0 - 1,000.0 pCi/g
- > 1,000.0 pCi/g

Standard Map Features

- Buildings and other structures
- Solar evaporation ponds
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, fences, hydrographs, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs. 1/95

NOTE:
The Pu-239/240 isoplot data created by Kriging Analysis for the SID Erosion Project, 1998. The units for the Pu-239/240 isoplot are pCi/g.

N

Scale = 1 : 20450
1 inch represents approximately 1704 feet

200 0 200 400

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

Prepared by:

RMRS Rocky Mountain Remediation Services, L.L.C.
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P.O. Box 464
Golden, CO 80402-0464

MAP ID: 98-0042(IsoRAD) October 29, 1998

/gis2/projects/fy98/98-0042/gw-bh-norad.aml

4

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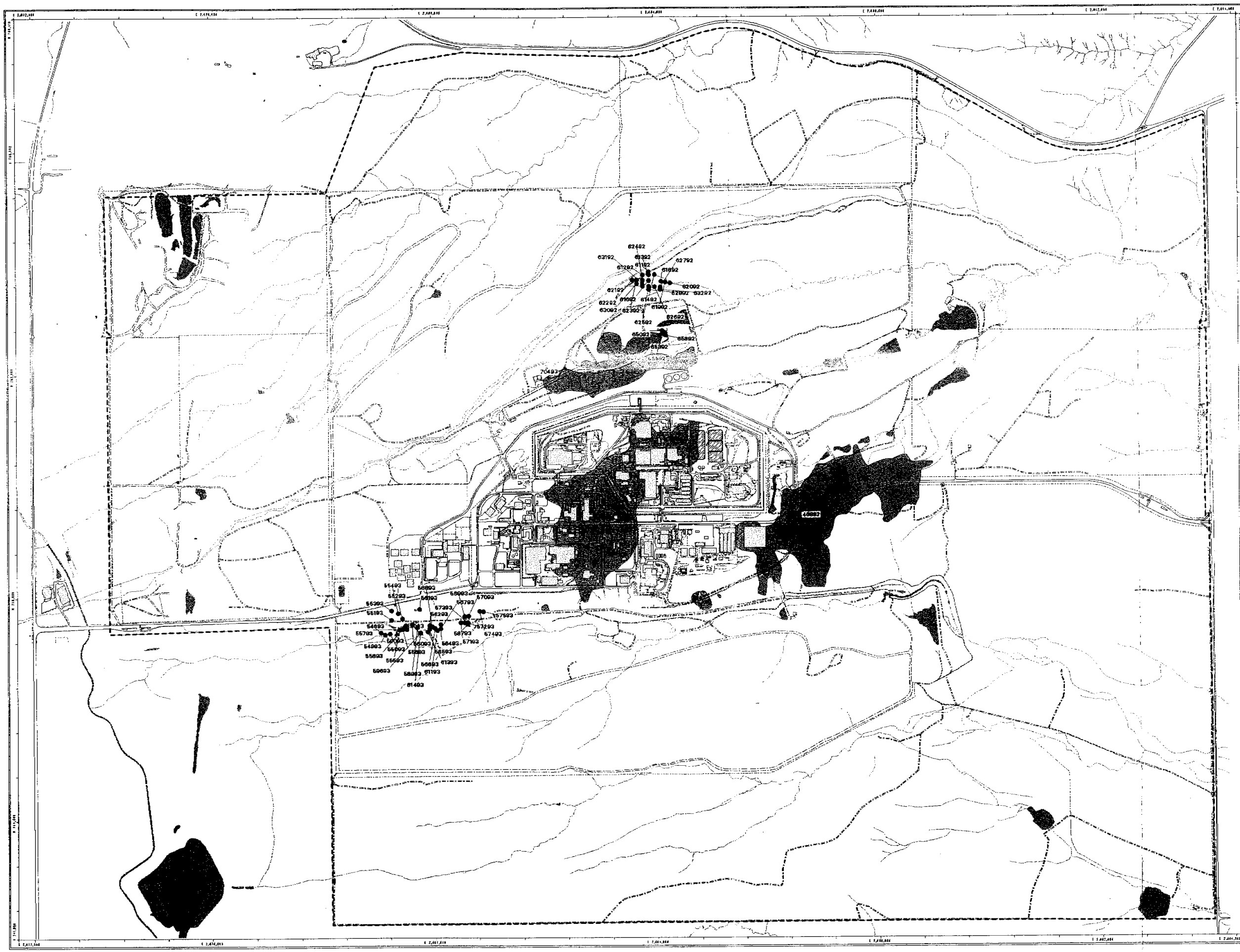

Figure 2

IDM Locations with RAD Results (No VOC) Less than RFCA Tier II Action Levels Relative to VOC Plumes

EXPLANATION

- Borehole Location
- Groundwater Wells
- Composite VOC Groundwater Plume (100 X MCL)
- Composite VOC Groundwater Plume (concentration equal to MCL)

Standard Map Features

- Buildings and other structures
- Solar evaporation ponds
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs. 1/95

Scale = 1 : 20450
1 inch represents approximately 1704 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy

Rocky Flats Environmental Technology Site

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MAP ID: 96-0042(VoChem)

October 28, 1996

/gis2/projects/fy96/96-0042/gw-bh-nochem.aml

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