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DEQ-IDHW

BEFORE THE IDAHO BOARD OF HEALTH AND WELFARE

RURAL KOOTENAI ORGANIZATION,)	
)	Docket No. 0102-95-34
Petitioner,)	
)	
v.)	FINAL ORDER OF THE
)	BOARD OF HEALTH AND
McCORMACK PROPERTIES OF IDAHO,)	WELFARE
INC., an Idaho Corporation,)	
)	
STATE OF IDAHO, DEPT. OF HEALTH)	
AND WELFARE, DIVISION OF)	
ENVIRONMENTAL QUALITY,)	
)	
Respondents.)	
)	

This is an appeal of the preliminary order of the hearing officer, which was entered June 14, 1996. Oral argument was heard by the Board of Health and Welfare on November 14, 1996. Petitioner/Appellant was represented by Marc McGregor, Esq. Respondent Division of Environmental Quality Idaho Department of Health and Welfare was represented by Kevin Beaton, Deputy Attorney General. Respondent McCormack Properties was represented by Ron Ringel, Esq., but did not participate in the argument. Having reviewed the record and considered the arguments and briefs of counsel, the Board affirms the decision of the hearing officer for the following reasons.

Petitioner Rural Kootenai Organization (RKO) seeks the reversal of the Division of Environmental Quality's (DEQ's) approval of the plans and specifications for a proposed wastewater

treatment system, and the issuance of the resulting permit No. LA-000145. The wastewater treatment system in question is a rapid infiltration basin system designed by J-U-B Engineers for McCormack Properties' Ridge at Cougar Bay near Coeur d'Alene, Idaho. Such systems have been in successful operation for 100 years; they are easy to operate, treat water to a high degree, and maintenance is straightforward. Exhibit E, p. 1; Tr., p. 511, lines 6 - 13.

RKO challenges the design of the wastewater treatment system and the grant of the permit on the basis that the design is inadequate to prevent violations of applicable water quality standards. The opinion that the design is inadequate is provided by RKO's expert, whom the hearing officer found to be less credible than Respondents' expert witnesses "based upon their greater level of knowledge and experience with the design, construction and operation of wastewater treatment systems." The Board agrees with this assessment.

RKO's expert, Dr. Bormann, is an Associate Professor at Gonzaga University. He has a master's in groundwater hydrology, which is the occurrence and movement of groundwater in the natural environment. He received that degree in 1980, and his Ph.D. in Civil Engineering in 1988, specializing in alluvial hydraulics. He has never designed or operated a rapid infiltration system. Petitioner's Exhibit 4; Tr., p. 39, lines 13 - 15; p. 247, lines 19 - 24. His knowledge of the Idaho guidelines for land application of wastewater treatment for Idaho was based on reading a brochure and DEQ rules. Tr., p. 257, line 18 through p. 258, line 2.

In contrast, the designer of the system, J-U-B Engineers has designed eight systems; the president and CEO, who was responsible for the design of the system, has been personally involved in the design of four systems. He has 20 years of experience in sanitary engineering. Tr., p. 464, lines 6 - 13; p. 465, lines 1 - 3; p. 469, lines 10 - 21. His M.S. in Civil Engineering had a sanitary engineering emphasis. Tr., p. 465, lines 12 - 20.

DEQ's primary expert, Dr. Wallace, is a professor of Civil Engineering at the University of Idaho. Since 1971, he has been owner and operator of a consulting firm that is devoted to water and

wastewater issues. He was a coauthor of the EPA Manual on which RKO relies, including the appendix on testing sites for applicability for land treatment, and contributed heavily to the rapid infiltration chapter in the EPA Supplement. (Petitioner's Exhibits 7 and 5; Tr., p. 376, line 23 through p. 377, line 16; p. 378, lines 5 - 20.) He has been involved in the evaluation of 15 or 16 systems, some of which were not feasible for construction, and has actual experience in the design of rapid infiltration basin systems. Tr., p. 378, line 24 through p. 379, line 6.

In addition to the greater experience and knowledge of Respondents' witnesses, the Board finds Dr. Bormann's opinions to be contradictory and unpersuasive. He originally testified that J-U-B had erred in using the Glover method for calculating the height of the mound that will develop during the application of effluent to the rapid infiltration basins. However, he later testified that the Glover method and the Hantush method, which he used, are similar, have a similar mathematical basis and a similar method of calculation. He admitted that both the Hantush and Glover methods are derived for a level surface, which is not present here. Tr., p. 113, lines 1 - 3; p. 116, lines 16 - 21. This is confirmed by Dr. Wallace. Tr., p. 382, line 1 through p. 383, line 4. Dr. Bormann testified that with no monitoring for virus required in the permit, there would be no determination of whether viruses are removed from the site. Tr., p. 337, lines 2 - 5. However, he had earlier acknowledged that it is very difficult and problematic to monitor for virus, so indicator organisms are used. Tr., p. 166, lines 18 - 24.

Furthermore, Dr. Bormann's testimony was designed to show that the treatment plan was inadequate due to the probability that the mounds under the basins would temporarily encroach upon the clearance suggested by the EPA manual. Respondent's Exhibit D, p. 5 - 30 states that "Excessive mounding will inhibit infiltration and reduce the effectiveness of treatment. For this reason, the capillary fringe above the ground water mound should never be closer than 0.6 m (2 ft) to the bottom of the infiltration basin." (Emphasis in original.) However, Dr. Bormann made no calculations to incorporate the slope at the site, nor to determine the extent to which treatment would be inhibited. Tr., p. 116, lines 7 - 8; 308, lines 11 - 16. He agreed that the EPA Manual and Supplement specifically indicate that rapid infiltration basins have worked in the wintertime in Idaho, which was

another of his concerns. Tr., p. 309, lines 7 - 11. He had no opinion on whether DEQ should have disapproved the plans and specifications, nor whether DEQ complied with its rules or not. Tr., p. 340, line 10 through p. 341, line 3. Rather than offering a firm opinion that the system would violate applicable standards in specific terms, Dr. Bormann testified only that a better evaluation of the site would have occurred if questions and issues he identified had been addressed. Tr., p. 168, lines 16 - 22.

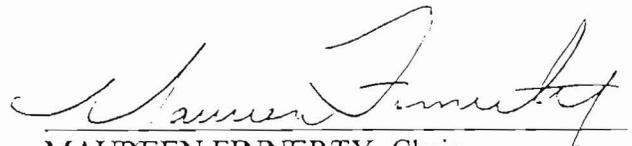
In contrast, Dr. Wallace agreed that the capillary fringe would intrude into the bottom of the rapid infiltration basin for a short period of time, and guessed that between 10% and 15% of effectiveness would be lost, which would not be a problem because the water would be applied at very low rates at this site. Tr., p. 392, line 24 through p. 393, line 12. As to the statement from the EPA Manual quoted above, Dr. Wallace explained that he had reviewed the text in draft and agreed it would be very desirable to have that degree of separation between mound and basin. However, he does not know why the guidance referred to “never” except that the author may have felt very strongly about it, no one who reviewed the draft contested it and so the text was unchanged. Tr., p. 441, line 14 through p. 442, line 5. James Coleman of J-U-B Engineers testified that there are no other references to capillary fringe in the literature. Tr., p. 876, lines 1 - 5. This was confirmed by a DEQ engineer, James MacInnis. Tr., p. 945, line 22 through p. 946, line 4. Kirby Vickers, a J-U-B engineer, pointed out that the mound would be under a very small portion of the basin and that the issue of capillary fringe and mounding is a narrow aspect of the overall system. Tr., p. 617, lines 1 - 11.

Finally, the conservative design of the Cougar Bay rapid infiltration system lends support to the hearing officer’s conclusion that the system will be operated consistent with applicable water quality standards. Findings of Fact, Conclusions of Law and Preliminary Order at 21 - 24. Some of the conservative design elements include reducing the application rate from the allowable 4% to .04%, increasing the basin 10 times larger than required for an ideal site, providing for additional lagoons, and responding positively to Dr. Wallace’s suggestion to install an additional drain. Tr., p. 555, line 2 through p. 556, line 19. Additional monitoring to protect the adjacent landowner’s stream

and requirements for disinfection are also part of the permit. Respondent's Exhibit W, page 8 of MacInnis memo to Martin Bauer, dated December 11, 1995.

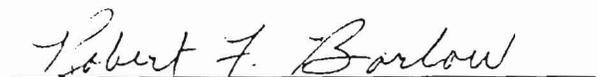
NOW, THEREFORE, the Idaho Board of Health and Welfare hereby AFFIRMS the hearing officer's decision dated June 14, 1996, adopts it as the Board's own and incorporates it herein by reference.

DATED this 6th day of December, 1996.

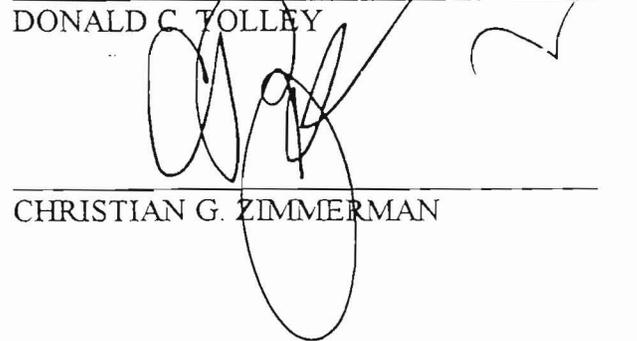

MAUREEN FINNERTY, Chair


G. BERT HENRIKSEN, Vice Chair


MARGUERITE G. BURGE


ROBERT F. BARLOW


DONALD C. TOLLEY


CHRISTIAN G. ZIMMERMAN

John Bermensolo dissented.

This is a final Order of the agency. Pursuant to Section 67-5270 et seq., Idaho Code, any party may appeal to district court by filing a petition in the county in which:

- 1) a hearing was held,
- 2) the final agency action was taken,
- 3) the party seeking review of the order resides, or
- 4) the real or personal property that was the subject of the agency action is located.

An appeal must be filed within twenty-eight (28) days of the date of mailing of this final order. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

CERTIFICATE OF MAILING

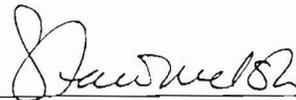
I HEREBY CERTIFY that on this 20th day of ~~November~~ ^{December}, 1996, a true and correct copy of the foregoing FINAL ORDER OF THE BOARD OF HEALTH AND WELFARE was served by regular U.S. first class mail with postage prepaid thereon, to:

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STACI WELSH
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BEFORE THE DEPARTMENT OF HEALTH AND WELFARE

STATE OF IDAHO

RURAL KOOTENAI ORGANIZATION,)	
INC., an Idaho non-profit)	
organization,)	
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Petitioner,)	Docket No. 0102-95-34
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v.)	
)	FINDINGS OF FACT,
IDAHO DEPARTMENT OF)	CONCLUSIONS OF LAW AND
HEALTH AND WELFARE and,)	PRELIMINARY ORDER
MCCORMACK PROPERTIES OF)	
IDAHO, INC., an Idaho)	
corporation,)	
)	
)	
Respondents.)	
)	

INTRODUCTION

This is a contested case proceeding before the Board of Health and Welfare, State of Idaho, ("the Board") pursuant to Idaho Code Section 39-107(6), the Idaho Administrative Procedures Act, Title 67, Chapter 62, Idaho Code and the Rules Governing Contested Case Hearings and Declaratory Rulings, IDAPA 16, Title 5, Chapter 3. This proceeding involves a challenge by Petitioner Rural Kootenai Organization ("RKO") to certain action taken by Respondent Idaho Department of Health and Welfare, Division of Environmental Quality ("DEQ"). More specifically, RKO challenges DEQ's action in approving plans and specifications and issuing Wastewater Land Application Permit No. LA-00145 in connection with a wastewater

treatment system for a residential subdivision known as "the Ridge at Cougar Bay" in Kootenai County, Idaho.

The hearing in this proceeding occurred over a six day period in January, 1996. At the hearing, RKO was represented by Marc McGregor and Charles Sheroke. Respondent McCormack Properties of Idaho, Inc. ("McCormack") was represented by Dana L. Rayborn Wetzel of the firm Wetzel and Fasnacht. DEQ was represented by Kevin J. Beaton, Deputy Attorney General.

Extensive testimony and documentary evidence was received at the hearing from all parties. In addition, all parties submitted a written legal argument regarding their respective positions as well as proposed findings of fact. The hearing officer deems this matter to have been submitted for decision on May 16, 1996, the date on which the hearing officer received McCormack's Reply to Petitioner's Proposed Findings of Fact.

Based upon the evidence presented in this proceeding, the hearing officer makes the following findings of fact and conclusions of law.

FINDINGS OF FACT

1. McCormack owns certain property located near Lake Coeur d'Alene in Kootenai County, Idaho. McCormack's plans for this property include construction of a 92 unit residential development known as "the Ridge at Cougar Bay" ("the Development"). McCormack has retained J-U-B Engineers ("JUB") to provide technical design services and engineering for the Development infrastructure,

including a water system, a wastewater treatment system, roads and a storm water system.

2. In order to properly dispose of domestic wastewater that would be generated by homes in the Development, McCormack initially sought to connect the Development to the City of Coeur d'Alene's sewage treatment plant. However, this connection was denied by the city as the Development was outside city limits. McCormack apparently then sought approval for an on-site wastewater treatment system including a community drain field. Approval for such a system was denied by the Panhandle Health District.

3. At this juncture, McCormack and JUB focused their efforts on gaining approval for an on-site wastewater treatment system including a "rapid infiltration system". In July of 1993, as a first step in obtaining approval for such a wastewater treatment system, JUB, on behalf of McCormack submitted to DEQ a Preliminary Wastewater Treatment Proposal for Rapid Infiltration Basins. After initial review of this proposal, DEQ staff requested additional information concerning soils at the site, groundwater quality, flows beneath the site and a pilot test.

4. The utilization of rapid infiltration systems is a proven method, nationally and in Idaho, for effectively and economically treating wastewater. The treatment of wastewater by a rapid infiltration system is also a recognized treatment method in DEQ's land application permitting rules. See IDAPA 16.01.17.06.

5. In the operation of a rapid infiltration system, partially treated wastewater is applied to land at a specified rate

for a specified duration. The wastewater then percolates through the soil and eventually reaches existing groundwater or surface water. The treatment of the wastewater occurs through a combination of biological, chemical and physical processes in the soil column. Once applied to the land, most of the treatment occurs in the top 6-8 inches of unsaturated and oxygenated soil, where aerobic bacteria can break down wastewater constituents and other potential pollutants can be absorbed, immobilized or filtered by the soil. To achieve desired treatment in a rapid infiltration system, the "surface soils" (i.e., the top 8 inches of soil) should be composed of some percentage of silt or fine-grained soils so that wastewater passes through slowly enough to undergo the desired biological, chemical and physical processes. Once the wastewater percolates throughout the surface soils, it is important for continued effective treatment that the soils underlying the surface soils be more porous or permeable (i.e., sandy or gravel-like in composition) so that water moves quickly away, both vertically and horizontally, from the point of application to ensure that the surface soils remain unsaturated. The rising of water under the surface, toward the point of application of the wastewater on the surface, is known as mounding. Excessive mounding has the potential to compromise the treatment capacity of the surface soil by creating saturated and oxygen poor soils that are not conducive to effective treatment. Therefore the type of soils at the surface and the type and depth of the underlying soils must be evaluated

prior to a determination whether a proposed site is suitable for a rapid infiltration system.

6. In 1993, JUB hired Howard Consultants to evaluate soil conditions at the Development site for purposes of determining whether soil conditions were acceptable for a rapid infiltration system. Howard Consultants and JUB dug in excess of 90 test pits and holes at the site to evaluate soil conditions and existing groundwater conditions. Based upon its investigation, JUB concluded that the northwest corner of the Development site was an acceptable area for a rapid infiltration system in which partially treated wastewater would be applied to a series of "rapid infiltration basins ("RIBs"). This area of the site had the deepest soils and the desired combination of fine-grained soils and sandy soils that are necessary to achieve adequate treatment in rapid infiltration systems. The only "limiting soil factor" in this area of the site was the depth of the soil. In this regard, in some areas underlying the proposed RIBs, an impermeable clay layer was encountered only ten feet below the surface. The depth of soils is relevant to the effectiveness of rapid infiltration systems because it is a factor in determining how quickly water can move vertically away from the surface.

7. Another important factor in evaluating whether a site is suitable for a rapid infiltration system is knowledge of existing groundwater depths and flows. The depth of existing groundwater will influence the wastewater's vertical migration in the soil column and the depth of saturated conditions once the wastewater is

applied to the land. Knowledge of the direction of existing groundwater flow is important in predicting where the wastewater will flow once it is applied to the land and therefore where monitoring wells should be located to determine treatment effectiveness.

8. Howard Consultants prepared two soils reports regarding their investigation on the Development site, dated October 1993 and July 1994, which identify certain areas throughout the Development site where groundwater was encountered intermittently and seasonally. In the area of the proposed RIBs, groundwater was intermittently encountered in Test Pit No. 16 at eight feet below ground surface. The absence of a continuous groundwater flow under the site made it difficult to definitively determine the direction of the groundwater flow which would occur if wastewater was applied to the proposed RIBs.

9. As requested by DEQ, JUB performed a "flooded basin test" at the Development site in October 1993. A report was prepared on the test and submitted to DEQ in June 1994. The purpose of the flooded basin test was to determine the "clear water acceptance rate" of the site's soils, i.e., how quickly water will percolate through the soil, a factor relevant to the design of a rapid infiltration system. In this regard, knowledge of the clear water acceptance rate is important in determining the rate at which wastewater can be applied to the soil. Typically, rapid infiltration systems are designed so that the rate of application of the wastewater is 10% to 15% of the clear water acceptance rate,

since treated wastewater applied to the land typically contains some solids which slow down the rate of percolation through the surface soils. The results of the flooded basin test indicated that the average clear water acceptance rate for soils at the site was four (4) inches per hour.

10. In designing the proposed RIBs, JUB relied upon scientific literature, two EPA manuals (Process and Design Manual, Land Treatment of Municipal Wastewater (1981) and Process and Design Manual, Land Treatment of Municipal Wastewater, Supplement on Rapid Infiltration and Overland Flow (1984)) ("the EPA Manuals") and its experience and expertise in designing RIBs currently in operation within the state of Idaho. In designing the proposed RIBs, JUB utilized a very conservative design approach to address any potential treatment problems that might be encountered by reason of the less than ideal soil depth in the northwest corner of the Development site. Design features reflecting this conservative approach include the following:

a. Each RIB was oversized so that less wastewater would be applied over a larger surface area, thereby reducing the potential impact of excessive mounding and increasing treatment effectiveness. The EPA suggested design criteria for application rates to RIBs is 10% to 15% of the clear water acceptance rates. However, to compensate of less than ideal soil depth, JUB designed the RIBs for an application rate of 1% of the clear water acceptance rate or 0.04 inches per hour. This lower application

rate, combined with application over a larger surface area, further reduces the potential impact of excessive mounding.

b. The rotation of dosing the RIBs was very conservative and allowed for two days dosing at slow rates with ten days of rest or drying. This conservative dosing rotation also serves to mitigate the potential impact of excessive mounding.

c. The RIBs were designed to accept 26,500 GPD of wastewater, yet the maximum amount of wastewater that would be generated by the Development is 23,000 GPD.

d. The storage lagoon was sized so that significant amounts of wastewater could be stored and treated prior to application onto the RIBs. Excess storage capacity is particularly important in winter because biological treatment of wastewater is slowed, and therefore, excess storage capacity in the lagoon allows for additional operational flexibility.

11. On August 18, 1994 DEQ received from McCormack an application for a wastewater land application permit to be used in connection with the Development's wastewater treatment system. DEQ acknowledged receipt of "complete" application and advised McCormack that its application would be reviewed and processed according to applicable rules.

12. In August 1994, in connection with McCormack's application for a wastewater land application permit, JUB submitted an engineering report entitled "Supplemental Information for Land Application Permit". This report set forth the proposed design for a rapid infiltration system in the northwest corner of the

14. DEQ staff, and in particular Jim MacInnis, a registered professional engineer employed by DEQ, consulted with JUB concerning the proposed design of the RIBs and McCormack's pending application for a wastewater land application permit. Following applicable rules for the review of such applications, Mr. MacInnis prepared a draft "staff analysis" of the permit application. This analysis was then circulated for review by other staff members at DEQ. During this review, a concern was raised that phosphorus might "break through the soil" and eventually discharge to Lake Coeur d'Alene. Since phosphorus is a pollutant of concern for Lake Coeur d'Alene, Mr. MacInnis requested that JUB prepare a phosphorus analysis to determine if the underlying soils would adequately remove phosphorus. In May 1995, JUB submitted a phosphorus analysis prepared by Dr. Alfred T. Wallace. Dr. Wallace's analysis indicated that the underlying soils would adequately remove phosphorus.

15. In June 1995, DEQ received preliminary plans and specifications for the drinking water and wastewater treatment systems anticipated for the Development. The purpose of plans and specifications is to provide a guide to the contractor that will construct the facility.

16. After numerous revisions to the plans and specifications during the summer of 1995, final plans and specifications for a drinking water and wastewater treatment system for the Development were submitted to DEQ in August, 1995. After review, these plans and specifications were approved by DEQ on September 1, 1995.

17. On October 2, 1995, RKO filed a petition requesting a contested case hearing to challenge DEQ's action in approving plans and specifications for the Development's wastewater treatment system. RKO is a nonprofit corporation formed to protect rural areas of Kootenai County from overdevelopment. RKO's members include property owners near the Development site who assert that their health and property values will be adversely affected by the wastewater treatment system proposed by McCormick.

18. Graydon Johnson, a member of RKO, owns property located southwest of the Development site. There are three springs on Mr. Johnson's property, one of which he currently uses as a domestic water supply.

19. Subsequent to DEQ's review and approval of the final plans and specifications, Mr. MacInnis prepared a final October 1995 staff analysis supporting the issuance of a draft permit for the application of wastewater to land within the Development. The draft staff analysis had been extensively reviewed, discussed and commented upon by other members of DEQ staff in Coeur d'Alene and Boise. The final staff analysis addressed all significant facts and concerns related to the proposed rapid infiltration system. Major issues raised in the staff analysis concerned the underground movement of wastewater at the site after land application. In this regard, Mr. MacInnis noted that there was a possibility that the treated wastewater could cause new seeps in the Development site and that treated wastewater might be hydraulically connected to springs developed on Graydon Johnson's property. Based upon these

concerns, it was recommended that additional monitoring wells be placed near the southwest property boundary line and that Mr. Johnson's three springs be monitored quarterly to determine any impacts. The staff analysis concluded that the proposed rapid infiltration systems would effectively remove all virus and coliform bacteria and therefore disinfection of the wastewater was not necessary. The staff analysis concluded that proper operation of the proposed rapid infiltration system would protect beneficial uses established under Idaho's Water Quality Standards and Wastewater Treatment Requirements, IDAPA 16, Title 1, Chapter 2.

20. Simultaneously with issuance of the staff analysis, DEQ issued a draft permit to McCormack. Copies of the draft permit and staff analysis were sent to McCormack and RKO and written comments were received from those parties on the draft permit. Thereafter, Mr. MacInnis prepared a Supplemental Staff Analysis on December 11, 1995 responding to all comments and again recommending that the wastewater land application permit be approved.

21. On December 11, 1995, DEQ issued Wastewater Land Application Permit LA-000145 to McCormack. This permit requires that groundwater cannot be contaminated above the limitations established for potable water supplies. In order to ensure that groundwater is protected, the permit establishes numerous monitoring requirements. As required by the permit, lagoon effluent must be monitored monthly prior to application in the RIBs. The permit also requires, at a minimum, the installation and quarterly monitoring of five separate wells: two within one hundred

feet of the RIBs, two near the southern property line of the Development, and one up gradient of the RIBs. The permit identifies which constituents must be monitored. The permit requires annual monitoring of soils within the RIBs for various constituents of concern. The permit also requires McCormack to sample Graydon Johnson's three springs on a quarterly basis for various constituents and to monitor surface springs and seeps that may be hydraulically connected to groundwater under the rapid infiltration system. Within three (3) months of issuance of the permit, McCormack is required to submit a groundwater monitoring plan for review and approval. Finally, the permit requires McCormack to submit a revised plan of operation within fifteen (15) months of the issuance of the permit, which describes in detail the operation, maintenance and management of the facility to ensure compliance with the conditions of the permit. The monitoring plan and revised plan of operation had not been submitted to DEQ as of January 26, 1996, the date of which the hearing in this proceeding was concluded.

22. On or about December 20, 1995, RKO filed an amended petition in this proceeding challenging DEQ's issuance of Wastewater Land Application Permit No. LA-000145. A contested case hearing was subsequently scheduled to consider both this challenge as well as RKO's initial challenge to DEQ's approval of plans and specifications for the wastewater treatment system.

23. At the hearing, RKO devoted substantial time in presenting testimony questioning the mounding calculations

performed by JUB in support of McCormack's application for a wastewater land application permit. The mounding calculations originally performed by JUB, and variations of those calculations subsequently performed by Dr. Noel Bormann, expert witness for RKO, and Dr. Alfred T. Wallace, expert witness for McCormack, attempt to estimate how high the mound will rise under the RIBs after the application of wastewater. These mathematical calculations require assumptions not present at the Development site, particularly an established groundwater. These mathematical calculations also require an estimate of the horizontal conductivity of site subsurface soils at the site.

24. Based upon all of the evidence presented on estimating the potential mound, it is clear that sometime after operation of the rapid infiltration system begins, a permanent saturated zone under the proposed rapid infiltration system will be created. The permanent saturated zone will likely be established at approximately five feet above the existing subsurface impermeable clay layer. Depending upon the horizontal conductivity of the subsurface soil, after each dosing on a RIB, a mound of approximately two feet will temporarily rise above the established saturated zone towards the bottom of each RIB. Since the soil depth to the impermeable clay varies from ten feet to fifteen feet in the area of the rapid infiltration system, the mound in some locations may temporarily exceed the EPA suggested clearance of three feet to six feet from the top of the mound to the bottom of the RIB. Although this "excess mounding" will dissipate in a matter

of hours, as subsurface water moves horizontally away from the RIB, it may nonetheless have some effect on the treatment of certain pollutants.

25. Dr. Alfred T. Wallace, a nationally recognized expert on the design and operation of rapid infiltration systems and coauthor of the EPA manuals relied upon by all of the expert witnesses, testified that it was his opinion that temporary excessive mounding might temporarily compromise the treatment of certain constituents, most notably nitrogen, the treatment of which might be compromised by 10% to 15%. Dr. Wallace, however, concluded that the design of the rapid infiltration system was adequate and that operation of the basins would result in compliance with applicable water quality standards. The one reservation expressed by Dr. Wallace concerned nitrogen removal and the issue of whether the rapid infiltration system would remove nitrogen to the required groundwater standard of 10mg/l nitrate. Nitrogen removal is dependent upon a variety of factors, including the presence of aerobic bacteria in the surface soils which convert ammonia to nitrate (nitrification). Thereafter, anaerobic bacteria in the saturated zone convert the nitrate to nitrogen gas (denitrification). In winter months when temperatures are low, the activity of aerobic bacteria that convert ammonia to nitrates are reduced. Therefore, in the winter months during land application, the surface soils absorb greater levels of ammonia and retain it until warmer temperatures increase aerobic bacteria treatment. The nitrification/denitrification process also occurs in the storage

lagoon prior to application to the RIBs. In order to ensure that the potable water supply standard of 10mg/l nitrate is not exceeded by operation of the rapid infiltration system, the permit and state regulations require that wastewater applied to RIBs cannot exceed concentrations of 20mg/l total nitrogen (ammonia and nitrates). Dr. Wallace testified that he was reasonably confident that the standard of 10mg/l nitrates could be achieved in the underlying groundwater if wastewater applied to the basins did not exceed the regulatory and permit requirement of 20mg/l total nitrogen.

26. The designing engineers (Jim Coleman and Kirby Vickers) as well as Jim MacInnis testified that based upon their experience with the operation of lagoons throughout Idaho, and specifically north Idaho, that the 20mg/l total nitrogen limit in the permit for discharge from the lagoon was achievable throughout the year. Also the sizing of the lagoon is such that if the wintertime total nitrogen concentration in the lagoon becomes a problem, the wastewater can be held for additional storage, thereby increasing treatment and removal of total nitrogen.

27. The designing engineers testified that based upon their experience with design and operation of rapid infiltration systems in Idaho, that temporary exceedance of EPA suggested criteria for mounding clearance would not materially effect nitrogen treatment effectiveness and that the standard of 10mg/l nitrate would be achieved.

28. If removal of total nitrogen or nitrates becomes a problem during operation of the proposed system, there are proven

technologies that can be implemented to ensure adequate nitrogen removal. If higher total nitrogen removal is necessary in the lagoon, natural clay minerals can be applied to the lagoon which will result in ammonia absorption by the clay and reduce total nitrogen. If removal of ammonia and subsequent denitrification to nitrogen gas become problems in the rapid infiltration system as a result of mounding, a passive underdrain can be placed between the six RIBs which can be pumped to control the height of the mound. Dr. Wallace did not believe it was necessary to add natural clay to the lagoon as part of the initial operation, but felt that installation of the underdrain was a wise safety feature to include in construction of the rapid infiltration system. Project designer, Jim Coleman, agreed with Dr. Wallace's recommendation.

29. Other potential pollutants of concern that may impact groundwater as a result of operation of the rapid infiltration system include fecal coliform, viruses and phosphorus. The surface soils in the area of the RIBs are adequate to remove all forms of bacteria associated with human waste through filtration, and therefore bacteria contamination of underlying groundwater does not appear to be a concern, even if mounding does impact treatment.

30. Based upon the phosphorus calculations performed by Dr. Wallace, removal of phosphorus through absorption onto the subsurface soils will be adequate throughout the duration of the permit.

31. The removal of viruses appears to be an absolute certainty in light of the performance of other rapid infiltration

systems throughout the United States. The EPA manuals note that there has never been documented contamination of drinking water from viruses as a result of operation of a rapid infiltration system. Also, the wastewater treatment system itself will virtually remove all viruses through storage in the lagoon and absorption and predation in the surface soils of the RIBs. Finally, the maximum life span of viruses is 107 days and the movement of groundwater/wastewater under the site is approximately two to three feet per day. At this rate, it will take one to two years for groundwater influenced by application of wastewater to reach the property boundary, thereby assuring that any drinking water source outside the property boundary will not be impacted by viral contamination.

32. There is a discontinuous and seasonal groundwater located beneath the Development site. The absence of any continuous groundwater at the site makes it difficult to predict with certainty which way the applied wastewater will flow after undergoing treatment in the RIBs. Dr. Bormann, expert witness for RKO, testified that he believed that some wastewater would flow south from the RIBs and eventually reach Graydon Johnson's springs on the southwest border of the Development site. Dr. Wallace and Jim Coleman testified that, based upon tightness of the soils in the southern portion of the property, the treated wastewater from the RIBs would initially flow south and then east through more permeable soils and never reach Mr. Johnson's springs. Mr. MacInnis noted the possibility that some treated wastewater from

the RIBs may reach Mr. Johnson's "spring #3" , and therefore required monitoring of groundwater along the southwest boundary of the Development as well as monitoring of Mr. Johnson's springs.

33. Mr. Johnson presently does not utilize spring #3 as a domestic water source. The spring that Mr. Johnson does utilize for domestic water use does not appear to be hydrologically connected to the treated wastewater that will migrate from the RIBs and is located over 1,500 feet from the rapid infiltration system. Nonetheless, DEQ required McCormack to monitor Mr. Johnson's domestic water spring as a condition of the permit.

34. A key component to successful treatment of a rapid infiltration system is proper operation of the system. It is likely that once the Development is built, a homeowners association will be formed and an operator will be hired to operate the system. It will be necessary for the operator to devote a few hours a day to ensure that all components of the rapid infiltration system are working properly and that required monitoring is conducted.

35. If properly operated, the rapid infiltration system will comply with all applicable water quality standards. If there is a problem during operation, the monitoring requirements set forth in the permit will timely detect the problem and proven alternative solutions can be implemented to protect public health and the environment.

CONCLUSIONS OF LAW

1. The Board has jurisdiction in this matter pursuant to Idaho Code Sections 39-105 and 39-107.

2. Pursuant to Idaho Code Section 39-118, plans and specifications for the construction of wastewater treatment systems in the state of Idaho must first be submitted to DEQ for review and approval. In order to be approved, plans and specifications must conform in style and quality to regularly accepted engineering standards.

3. The issuance of wastewater land application permits, such as the permit involved in this proceeding, is governed by IDAPA 16, Title 1, Chapter 17, Wastewater-Land Application Permit Rules. These rules prohibit the discharge of wastewater to land without a permit and establish application and processing procedures to be followed by applicants and DEQ. The rules also identify standard permit conditions and specific permit conditions "necessary for the protection of the environment and public health" that are included in wastewater land application permits. IDAPA 16.01.02.500 and 600.01. Standard and specific permit conditions include monitoring to protect public health and the environment. IDAPA 16.01.02.600.01.g and 600.05. For rapid infiltration systems, wastewater applied to the land cannot contain suspended solids in excess of 100mg/l and total nitrogen in excess of 20mg/l. IDAPA 16.01.02.600.06.

4. In ensuring that public health and environment are protected in connection with the issuance of land application

permits, DEQ is subject to the standards and limitations established in IDAPA 16, Title 1, Chapter 2, Water Quality Standards and Wastewater Treatment Requirements. Specifically relevant to the issues in this proceeding are Idaho's groundwater quality standards which require groundwaters to be protected as potable water supplies. IDAPA 16.01.02.299.03a. To ensure that groundwater is protected as a potable water supply, IDAPA 16.01.02.299.05.b provides that certain constituents in groundwater may not exceed specified numerical criteria or maximum allowable concentrations. Among other things, IDAPA 16.01.02.299.05.b provides that with respect to groundwater which may be impacted by the application of domestic wastewater to land, such groundwater may not exceed a maximum concentration of 10mg/l nitrate and a coliform bacteria count of 2 per 100ml.

5. As the petitioner, RKO bears the burden of proving, by a preponderance of the evidence, that grounds exist warranting the reversal of DEQ's action in approving plans and specifications for the wastewater treatment system. As petitioner, RKO also bears the burden of proving, by a preponderance of the evidence, that grounds exist warranting the reversal of DEQ's action in granting Wastewater Land Application Permit No. LA-000145.

6. RKO has failed to establish that grounds exist warranting the reversal of DEQ's action in approving plans and specifications for the wastewater treatment system.

7. RKO has failed to establish that grounds exist warranting the reversal of DEQ's action in granting Wastewater Land Application Permit No. LA-000145 to McCormack.

MEMORANDUM DECISION

This memorandum decision has been prepared by the hearing officer as a means for further explaining the reasoning underlying the preliminary order entered in this matter. Statements contained in this memorandum decision shall serve as additional findings of fact or conclusions of law as appropriate.

Initially, the hearing officer notes that the findings of fact entered by him are in large part adopted from the proposed findings of fact submitted by DEQ. In this regard, the hearing officer found that his determinations on most disputed factual issues were accurately and succinctly stated in DEQ's proposed findings. Moreover, based upon the hearing officer's independent review of the testimony and documentary evidence in this proceeding, the hearing officer is satisfied that DEQ's proposed findings of fact, as adopted by the hearing officer, are supported by substantial, competent evidence in the record.

RKO has challenged two separate actions by DEQ (a) the issuance of Land Application Permit No. LA-000145; and (b) the Department's action in approving plans and specifications for the proposed wastewater treatment development system.

In challenging DEQ's approval of McCormack's wastewater land application permit, RKO has asserted that DEQ's action should be reversed because the wastewater treatment system, as designed, will

result in violations of applicable Idaho water quality standards. In challenging DEQ's approval of plans and specifications for the Development's wastewater treatment system, RKO has asserted that DEQ's action should be reversed because the plans and specifications do not meet Idaho Code Section 39-118's requirement that plans and specifications meet regularly accepted engineering standards.

On the issue of whether the plans and specifications for the wastewater treatment system conform with regularly accepted engineering practices, RKO has placed primary reliance on the EPA manuals, contending that the EPA manuals establish minimum engineering standards for the design of wastewater treatment systems. The hearing officer has rejected this argument, concluding that the EPA manuals are simply "authoritative" reference materials to be used by engineers in designing wastewater treatment systems which will meet applicable water quality standards.

In the hearing officer's judgment, if the operation of a wastewater treatment system, as designed, would violate applicable water quality standards, it does not conform to regularly accepted engineering standards. If, on the other hand, a wastewater treatment system, as designed, can be operated in compliance with applicable water quality standards, then it follows that the plans and specifications meet regularly accepted engineering standards.

Based upon the evidence presented at the hearing, the hearing officer has concluded that RKO failed to establish that the operation of the wastewater treatment system, as designed, will

likely result in a violation of applicable water quality standards. To the contrary, the evidence considered as a whole indicates that the wastewater treatment system can and will be operated consistent with such standards. In reaching these conclusions, the hearing officer was required to assess the conflicting opinions of the parties' expert witnesses. On balance, the hearing officer found the testimony of Respondents' expert witnesses to be more credible, based upon their greater level of knowledge and experience with the design, construction and operation of wastewater treatment systems.

PRELIMINARY ORDER

Based upon the foregoing findings of fact and conclusions of law, the hearing officer hereby affirms DEQ's approval of plans and specifications for the Development's wastewater system and DEQ's issuance of Wastewater Land Application Permit No. LA-000145.

This is a preliminary order of the hearing officer. It can and will become final without further action of the Board unless any party appeals to the Board.

Within fourteen (14) days after the service date of this preliminary order, any party may in writing appeal or take exception to any part of the preliminary order and file briefs in support of the party's position on any issue in the proceeding to the Board (or the Board's designee). Otherwise, this preliminary order will become a final order of the Board.

If any party appeals or takes exception to this preliminary order, opposing parties shall have twenty-one (21) days to respond to any party's appeal to the Board. Written briefs in support of

or taking exception to this preliminary order shall be filed with the Board (or the Board's designee). The Board (or the Board's designee) may review the preliminary order on its own.

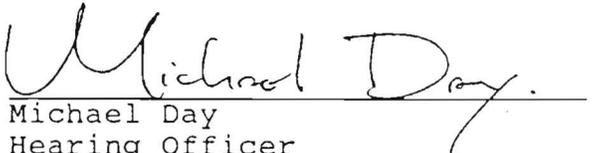
If the Board (or the Board's designee) grants a petition to review the preliminary order, the Board (or the Board's designee) shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. The Board (or the Board's designee) will issue a final order within fifty-six (56) days of the receipt of the written briefs or oral argument, whichever is later, unless waived by the parties or for good cause shown. The Board (or the Board's designee) may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order.

Pursuant to Sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this proceeding to district court by filing a petition in the district court of the county in which:

1. A hearing was held,
2. The final agency action was taken,
3. The party seeking review of the order resides, or
4. The real property or personal property that was the subject of the agency action is located.

This appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See Section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

DATED this 14th day of June, 1996.


Michael Day
Hearing Officer
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Boise, Idaho 83709
(208) 336-7933

CERTIFICATE OF MAILING

I hereby certify that on this 18th day of June, 1996, I mailed a true and correct copy, postage prepaid, of the foregoing FINDINGS OF FACT, CONCLUSIONS OF LAW AND PRELIMINARY ORDER to the following named individuals by first class mail:

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STACI WELSH
Administrative Procedures Coordinator