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March 21, 1973

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Syracuse, New York 13210

In the Matter of Niagara Mohawk Power Corporation  
(Nine Mile Point, Unit 2)  
Docket No. 50-410

Dear Mr. Goldsmith:

Enclosed for your information is a copy of comments received from the State of New York Department of Environmental Conservation, (dated March 7, 1973) concerning the regulatory staff's Nine Mile Point 2 Draft Environmental Statement.

Sincerely,

Bernard M. Bordenick  
Counsel for AEC Regulatory Staff

Enclosure:  
Comments

cc: w/enclosure  
Lex K. Larson  
LeBoeuf, Lamb, Leiby & MacRae

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STATE OF NEW YORK

COMMENTS

on the

"DRAFT ENVIRONMENTAL STATEMENT RELATED  
TO THE NINE MILE POINT STATION  
OF THE NIAGARA MOHAWK POWER CORPORATION"

by the

U.S. ATOMIC ENERGY COMMISSION

DIRECTORATE OF LICENSING

DOCKET NO. 50-410

ISSUED JANUARY 1973

1. P. S-3 - The State of New York has an existing review mechanism for environmental reports and draft statements (for nuclear matters) whereby the State Atomic Energy Council coordinates the review and consolidation of comments of its members, and the State Department of Environmental Conservation reviews the documents and coordinates the final State reply (including its comments, those from the Council and its members, and other State agencies). In the past, the Commission has recognized this mechanism and forwards the appropriate number of copies of each document to the New York State Atomic Energy Council (for distribution to member agencies), and the Department of Environmental Conservation (for internal review and for State agencies not represented on the Atomic Energy Council). In addition, the Commission forwards one copy to the State Clearinghouse in the Office of Planning Services, and they in turn notify all other appropriate State agencies of an opportunity to review.



We, therefore, suggest that the Commission recognize this review procedure in the future by appropriately listing the State agencies reviewing the document as follows:

New York State Agencies

Department of Environmental Conservation

Atomic Energy Council

Department of Commerce (Staff of Council)

Department of Health

Department of Labor

Department of Environmental Conservation

Department of Education

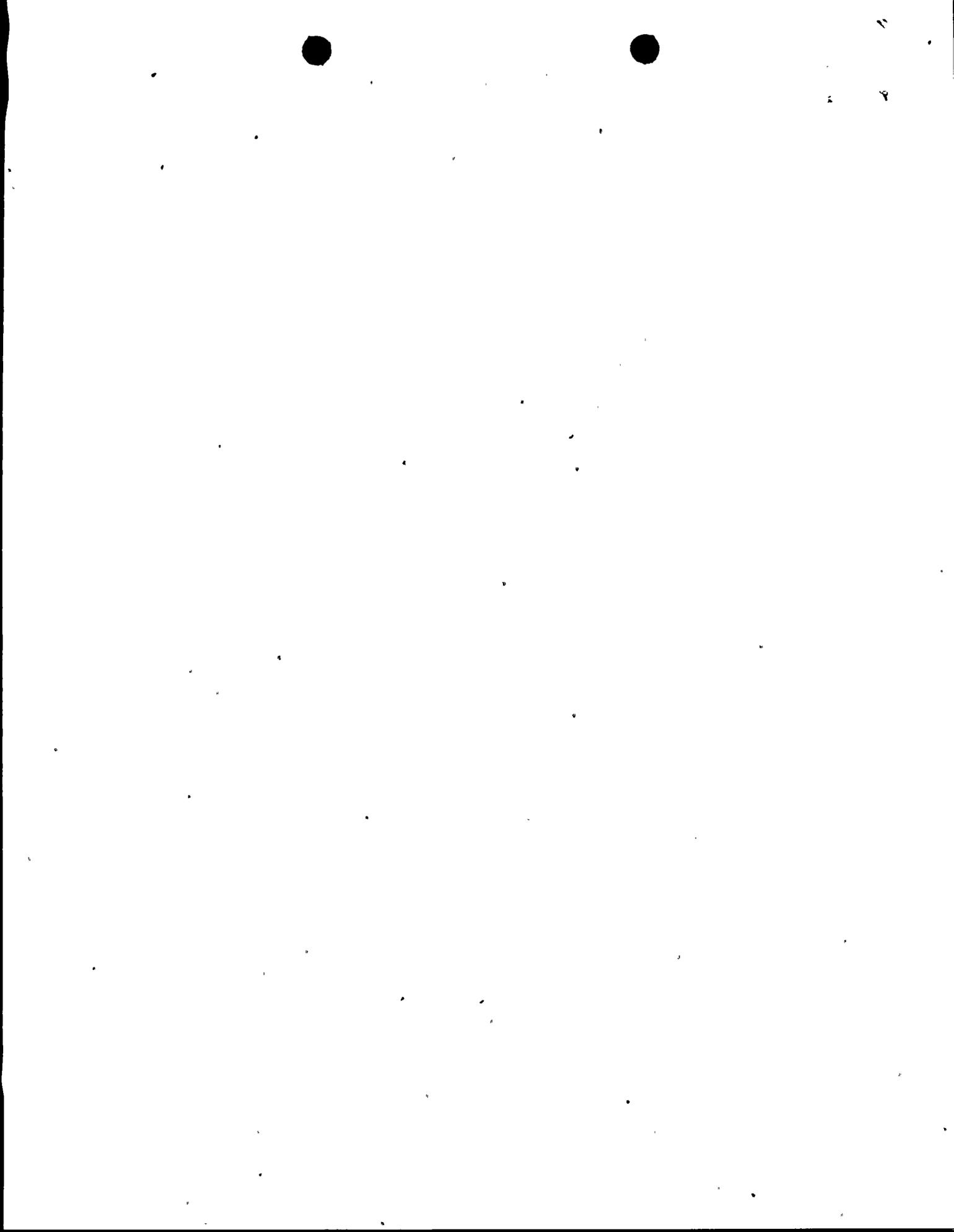
Atomic and Space Development Authority

Public Service Commission

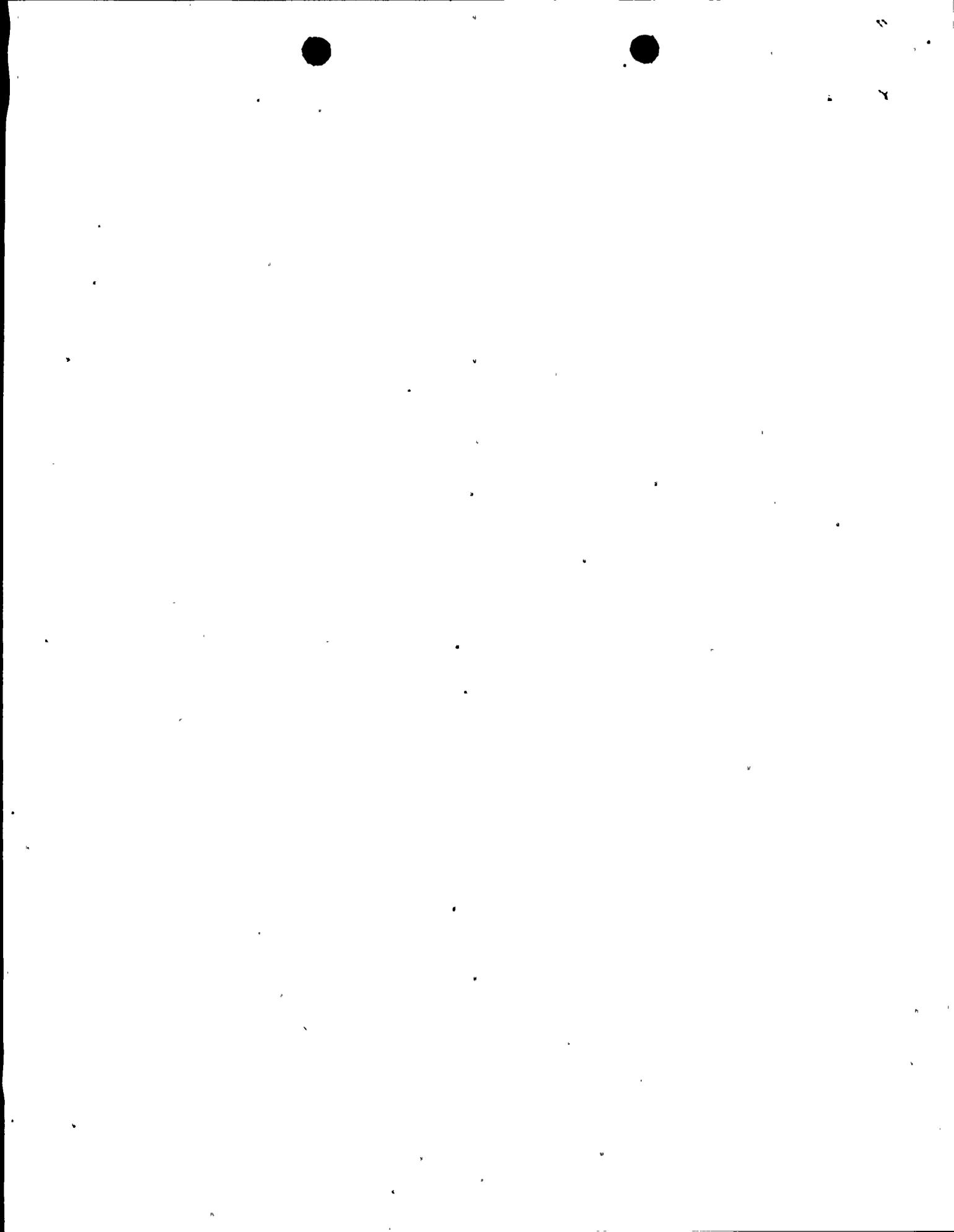
New York City Finance Administration

State Clearinghouse, Office of Planning Services

2. P. S-2 - Energy conservation with the resultant decrease in electric consumption should be discussed. It is realized that the electric consumption would eventually increase to a point where additional generating capacity would be necessary, however, this may be at a future date when technology would have developed sufficiently to force the consideration of a different type of facility.
3. P. S-3, Par. 8 - It is recommended that U.S. AEC approval be obtained and New York State be afforded the opportunity to review and comment upon each of the required environmental sampling and monitoring programs discussed



- prior to the initiation of each program.
4. P. 1-3, Table 1.1 - This table presents a listing of licenses and permits required for construction and operation of the facility. A certificate of "Environmental Compatibility and Public Need from the NYS Public Service Commission" is listed. Since New York State also issues certificates with similar titles for other plant features, it should be specifically stated that this certificate is for the plants' associated transmission lines pursuant to Article VII of the Public Service Law.
  5. P. 3-17, Section 3.4.2. - The blue pike is merely said to have declined in recent years. This is an understatement as the species has all but totally disappeared and is on the endangered species lists of both the Federal and State Governments.
  6. P. 2-22 - The section dealing with natural background radiation states the annual dose rate in the vicinity is 125 mRem. Field measurements by the Department of Environmental Conservation with a pressurized ionization chamber indicate an annual dose rate of about 70 mRem. The background dose rate should be separated into contributions from various sources such as cosmic, terrestrial, weapon fallout and other sources.
  7. P. 3-1 - The description of the external appearance of the plant is inadequate for an evaluation of the visual impact. Cross-sectional drawings of the plant and a discussion of vegetive cover would prove helpful in evaluating visual impact. The artist's drawings of the station on Pages 2-8 and 3-3 do not permit an evaluation of the aesthetic relationship between the plant and its surroundings. In fact, it appears as if the drawings are of two different facilities.



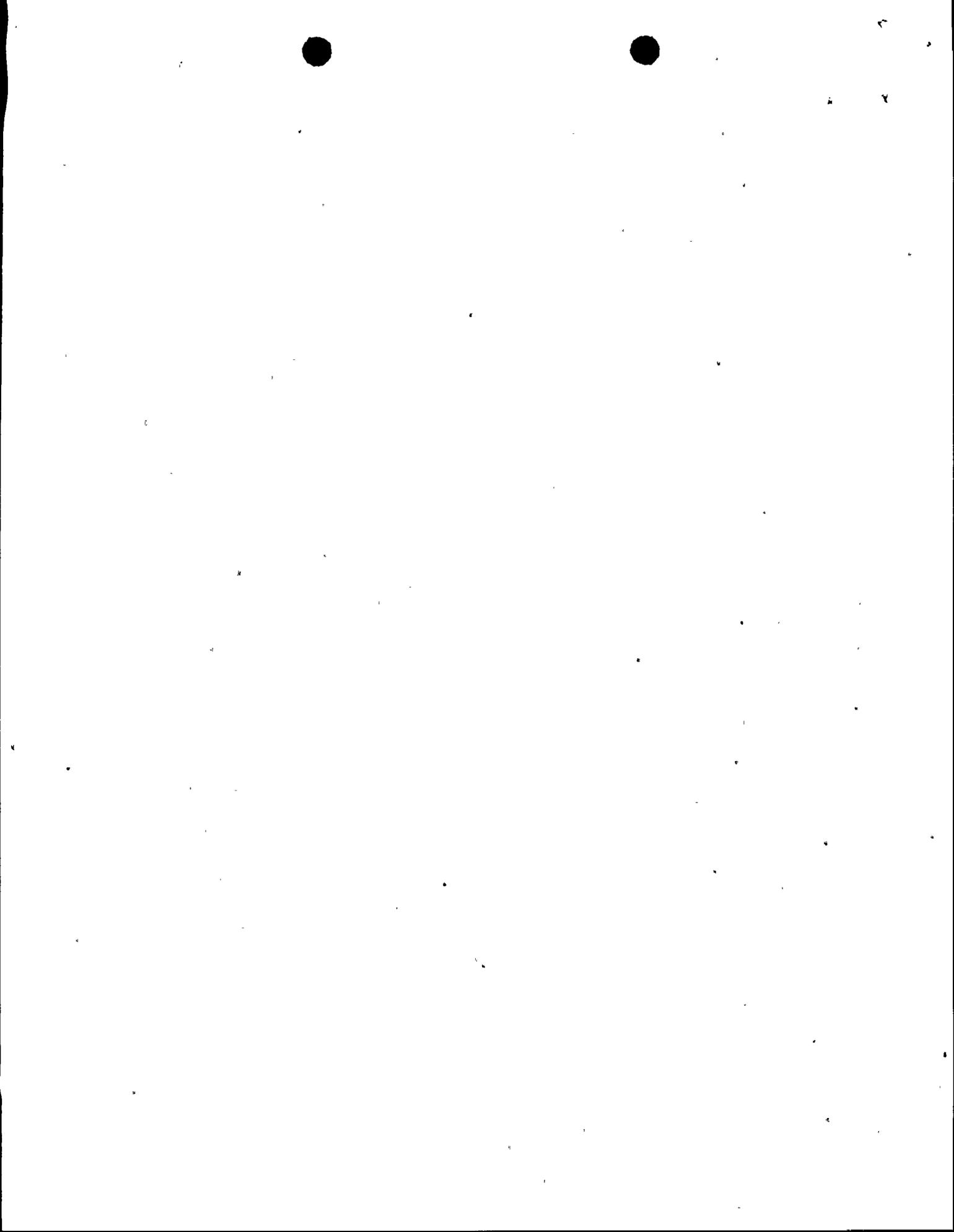
8. P. 3-17, Section 3.4.2. - Hydraulic modeling is expected to provide an accurate assessment of temperature and plume behavior for the near-field turbulent diffusion situation. Demonstration of criteria compliance (5°F @ 300') is accepted from the applicant's model construction and data.

A condition of the applicant's operation permit from New York State will require tri-axial isothermal mapping of the plume plus documentation of coincident ambient conditions. This will verify the predictive model as well as demonstrate compliance. The operator of the Fitzpatrick plant will also be required to conduct such surveys, and the inter-relationships between the two plants will also be verified.

9. P. 3-18, Section 3.4.2. - The applicant's hydraulic model is accepted as providing correct modeling of critical parameters. More confidence is placed in near-field turbulent jet diffusion than far-field plume distribution represented by lake current drift. However, criteria compliance is assured, and the relative relationship of Fitzpatrick and Nine Mile Stations can be assessed.

10. P. 3-19, Table 3.2. - Lake Assimilative Capacity is not required of the applicant's model for this situation. Assimilative capacity is a responsibility of the State; there is no problem in that respect with this discharge. Wave and Wind-Shear Mixing is not modeled, but field conditions with wind and wave action will enhance mixing. In that respect, the model is conservative.

11. P. 3-20, Section 3.4.2. - Model test data have been completed and reviewed by the State. The model has also been inspected under test conditions. Temperature readouts were observed and dye injection was utilized for both the plant



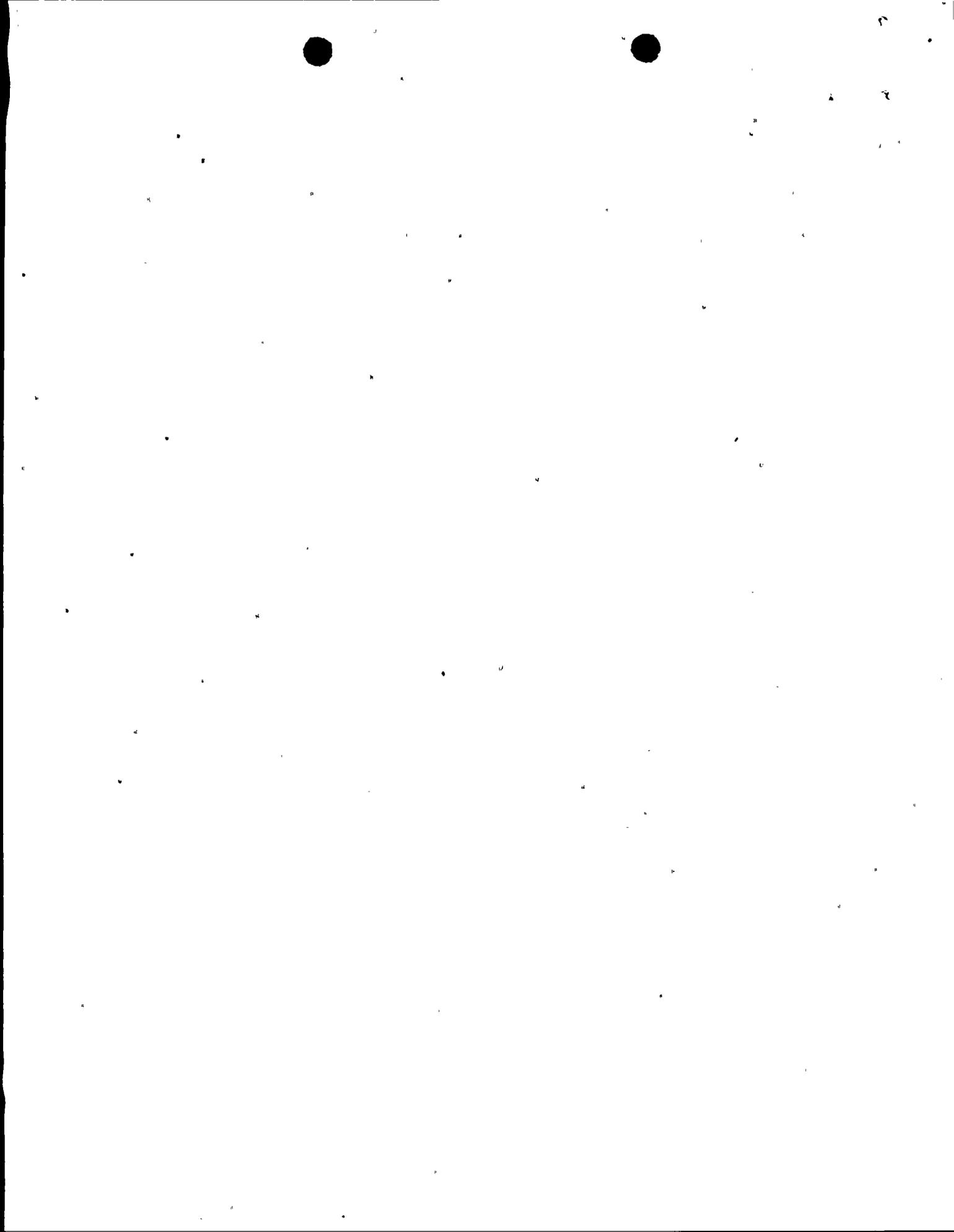
outfalls and the ambient lake. Based upon final data, the State concludes that thermal criteria will be met by the Fitzpatrick, and Nine Mile Point Units 1 and 2, that there will be no measurable recirculation at either intake and that the interference between the plumes is relatively minor and acceptable.

12. P. 3-20, Section 3.4.2. - The far-field data is open to question, but some perspective is also needed. Both plants are designed to meet, and it is accepted that both will, a criteria of 3°F @ 300'. With 4000' + separation of discharges, and considerable jet mixing occurring after the 300' distance, lesser temperatures will result.

Under any given current situation, both plumes will be similarly affected, i.e., both moving east or west, and not toward each other. Under still lake conditions, the edges will tend together, but under that condition also the maximum offshore and maximum jet dilution will occur. The applicant's data showing joining of the 1°F isotherm are accepted as being reasonable. No condition can be foreseen where merger at greater than 2°F would occur.

Even if this latter condition might occur, there is no problem with recirculation to the intake, nor available unaffected entrainment water, and hence no cause for concern.

13. P. 3-21, Section 3.4.2. - The distance offshore at which the plumes deflect and turn with the ambient current are not so important as the inter-reactions of the plumes themselves. This is discussed in comment #12. Comparison with other power plants at different locations is unacceptable for representing conditions that will occur at Fitzpatrick and Nine Mile.

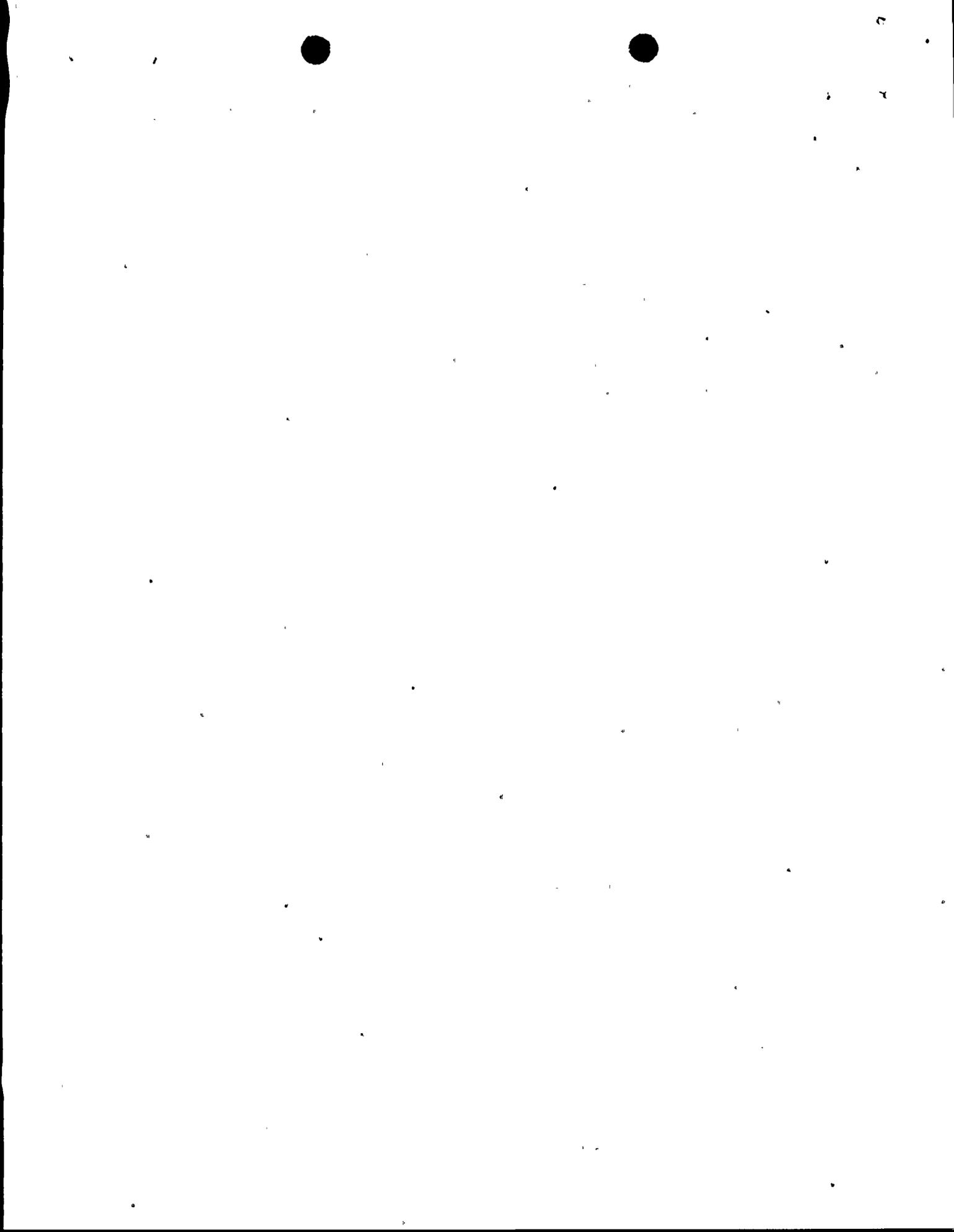


Similarity of discharge mode is not demonstrated. Submergence, velocity, port design, port spacing and other similarity (or lack thereof) have not been detailed. Little reliance or conclusion can or should be taken from such superficial comparisons.

Mathematical model predictions are subject to greater assumptive error than hydraulic models. Disparity between two mathematical approaches is expected. Reliance should be placed on the hydraulic model.

Previous researchers did not have a single hydraulic model to represent far-field conditions. While it may be argued that some imprecision or inaccuracy in modeling far-field conditions exists, both discharges are similarly affected. Therefore, the relative inter-reactions are considered reasonably correct.

14. P. 3-22, Section 3.4.2. - On-shore winds will exist at the site, but the wind data must be evaluated in terms of speed and persistence, and then resultant effects on plume behavior from induced on-shore currents. Little effect is expected when available data are reviewed in this context. The previous comments on the degree of plume inter-reaction still hold.
  
15. P. 3-22, Section 3.4.2. - Compliance with the 3°F @ 300' criteria does not depend primarily on how the surface water temperature is influenced by the Fitzpatrick plume. Such compliance is a function of the diffuser design for this plant. The AEC staff conclusion is rejected. It cannot be supported against the weight of evidence, and even contradicts their own conclusion previously expressed on p3-20.



16. P. 3-22 - The statement is made that the applicant will utilize appropriate equipment to meet the "as low as practicable" discharge criteria which will be delineated in the appropriate Technical Specifications. We support this concept fully. Inclusion of the "as low as practicable" discharge criteria as guides in the Technical Specifications is responsive to the State recommendations to the U.S. AEC for other nuclear power plants.
17. P. 3-28, Section 3.5.2. - On P. 3-23, it is stated for the liquid waste system that "Radiation detectors in the waste discharge line will provide a high radioactivity alarm and trip signal to the flow isolation valve such that no liquids with activity concentrations greater than authorized for release will be discharged." However, Section 3.5.2, on Gaseous Waste, does not contain a similar statement for gaseous releases. If the proposed facility has a high radioactivity alarm and trip signal for isolation of the gaseous waste system it should be discussed.
18. P. 3-29 - The table lists the estimated annual release of radioactive materials in liquid effluents. The table omits noble gases and Carbon 14. If these isotopes are included, the limits of Appendix I 10CFR50 may be exceeded.
19. P. 3-32 - The table lists the calculated annual release of radioactive gaseous effluents. The table omits carbon 14 which should be included.
20. P. 3-32 - The table lists the anticipated radioactive gaseous releases from Unit #2. The table should include contributions from the rad waste building.
21. P. 3-33, Section 3.5.3. - The Staff estimated that approximately 1500 drums of waste would be shipped offsite per year. However, on P. G-17 of the



"Environmental Survey of the Nuclear Fuel Cycle," the Staff estimates that 3,000 drums per year of high-level packaged radioactive waste would be shipped offsite for their "model LWR" which is 100 MW(e) smaller than the proposed Nine Mile Point Unit 2.

It is also stated on P. 3-33 that "the applicant estimates the volume of solid waste to be 9100 cubic feet per year." On P. G-17 of the "Environmental Survey of the Nuclear Fuel Cycle" it is estimated that this value would be 20,000 cubic feet per annual model LWR fuel requirements. These apparent discrepancies should be clarified.

22. P. 4-1 - The efforts to deal with noise were limited to a few brief unquantified generalizations. No attempt was made to identify noise that will be created by the construction program.
23. P. 5-1, Section 5.1.2 - The proposed 765 kV transmission line is subject to State Certification of Environmental Compatibility and Public Need under Article VII of the Public Service Law. A public hearing on the environmental compatibility and public need of this line is presently being conducted under the Article VII procedures of the New York State Public Service Commission. The Public Service Commission will make a detailed environmental analysis of the line before issuing this Certificate. The New York State Department of Environmental Conservation is a statutory party to this proceeding and is also assessing the line's environmental significance.
24. P. 5-3, Section 5.4 - This section reviews the radiological impact on man and concludes that the total man-rem from all effluent pathways, received by over 1,000,000 persons within a 50 mile radius of the site is about 43 man-rem per

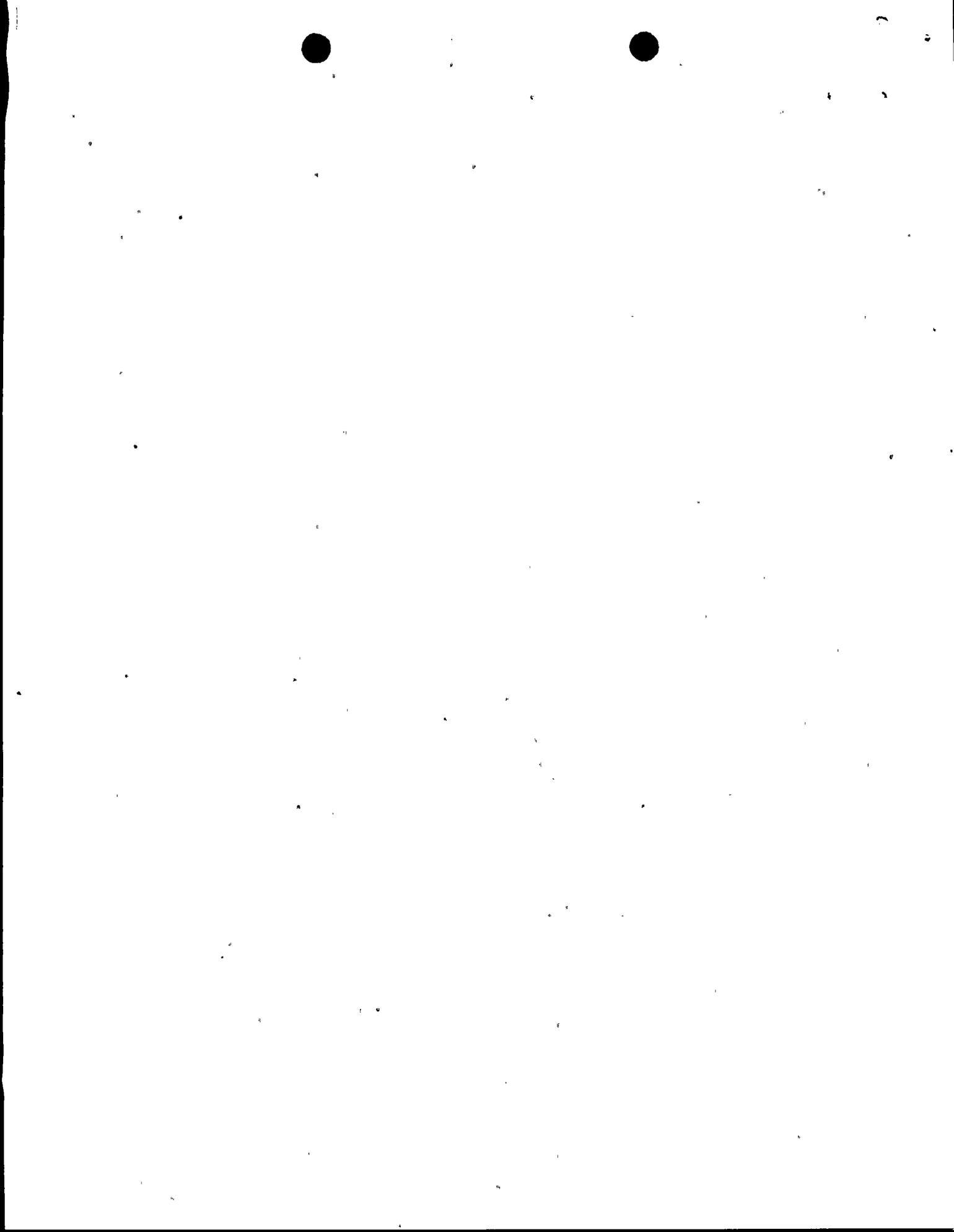


year as compared to 133,000 man-rem from natural background. Presentation of data integrated over a 50 mile radius is misleading unless it is presented together with exposure estimates in areas closer to the site boundary (low population zone, within 5 mile radius, etc.) where the exposures will be greater.

It is felt that this section should contain a more thorough evaluation of the critical organ (thyroid, lung, bone, and skin) dose to the population within a few miles of the site.

The apparent discrepancy in the values for whole body dose presented in Table 5.6 (8.3 millirem/year) and Table 5.8 (0.99 millirem/year) should be clarified. Also the ratio of thyroid dose from inhalation to thyroid dose from milk consumption (Table 5.6) does not appear to be consistent with published data even after considering the occupancy and dispersion factors. Another apparent discrepancy is the Environmental Statement's indication that, for design basis accidents, there is no substantive difference between thyroid and whole body dose, while the U.S. AEC's Safety Evaluation indicates the thyroid dose to be a factor of 10 to 40 greater than the whole body exposure.

25. P. 5-6 - Bioaccumulation factors given in the table are based on data from one author. They do not indicate the magnitude of biological variability present in nature.
26. P. 5-8 - The table lists the effluent releases from Nine Mile Point Unit #1. The iodines and particulates as measured in the gaseous streams from Unit #1 are lower than the anticipated releases from Unit #2 and Fitzpatrick even



though the waste purification systems now employed in Unit #1 are not as effective. To assure the measured values are within 10CFR50 limits, sampling procedures may need reevaluation.

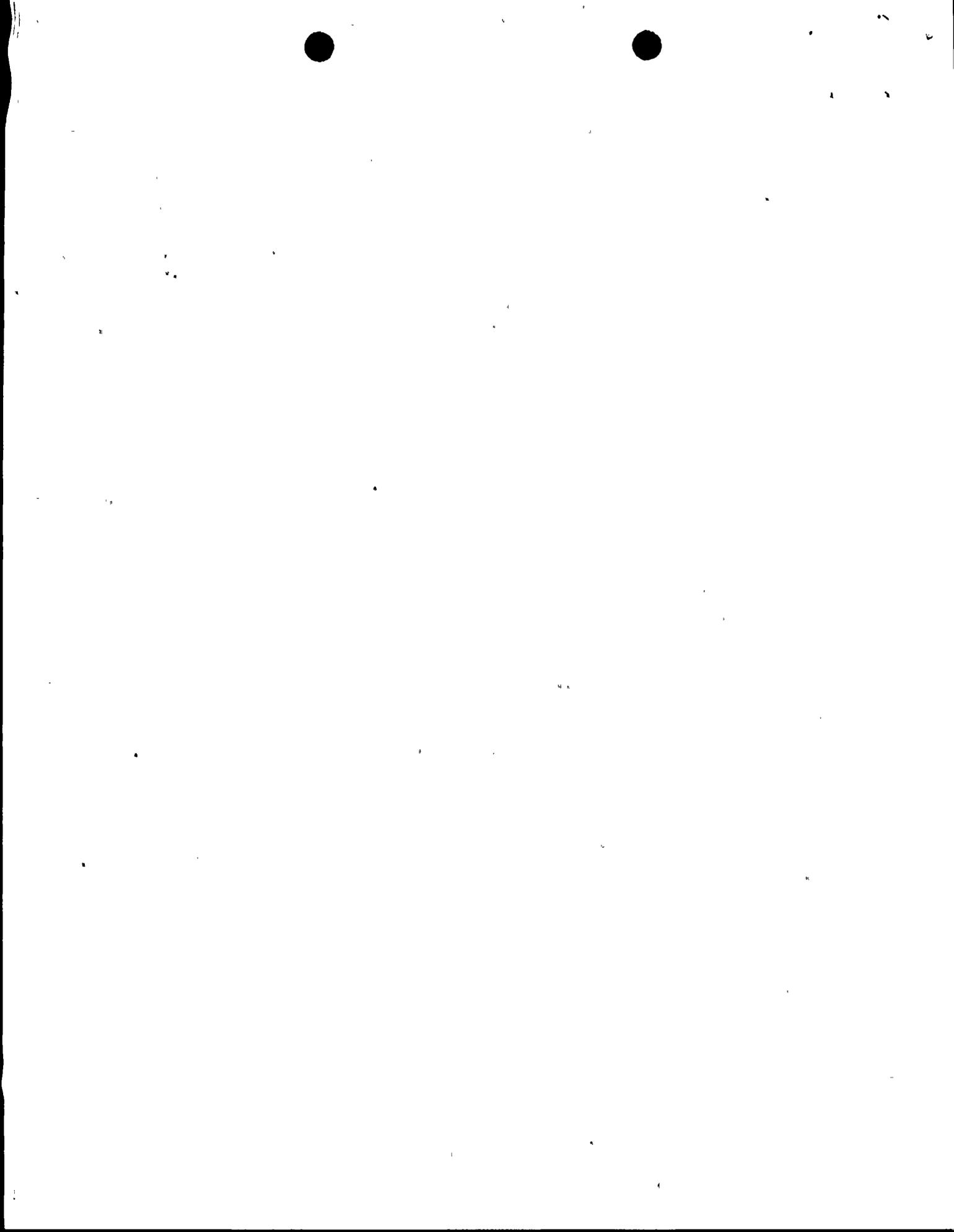
27. P. 5-9 - The statement is made that the AEC Office of Regulation has analyzed operating reactor coolant discharge for noble gas content. This data should be discussed in Table 3.4.
28. P. 5-11 - A discussion of thyroid dose from radioactive iodine via milk states that the dose from the three reactors may reach 12 mRem/yr from this pathway. The environmental statement should discuss whether the dose rate will still meet Appendix I when the Unit #1 purification system commences operation.
29. P. 5-12 - The table lists the anticipated annual releases of radioactive nuclides in gaseous effluents from Fitzpatrick. The table does not include the contribution from the rad waste building. Comparison of this table with the one on page 3-33 shows the effect of redundant recombiner systems. This comparison illustrates the desirability for redundant recombiner systems on each plant at this site.
30. P. 5-18 - The title "Population Dose from All Sources" is inappropriate in that it does not consider contributions from other nuclear power plants that contribute to the population within the 50 mile radius. The growing concentration of nuclear power plants on the south shore of Lake Ontario requires an evaluation of the interaction of the environmental aspects of these sites.
31. P. 5-20, Table 5.8 - It is stated that the Nine Mile Point Unit 1 contribution is included for radii greater than five miles. The Statement should contain



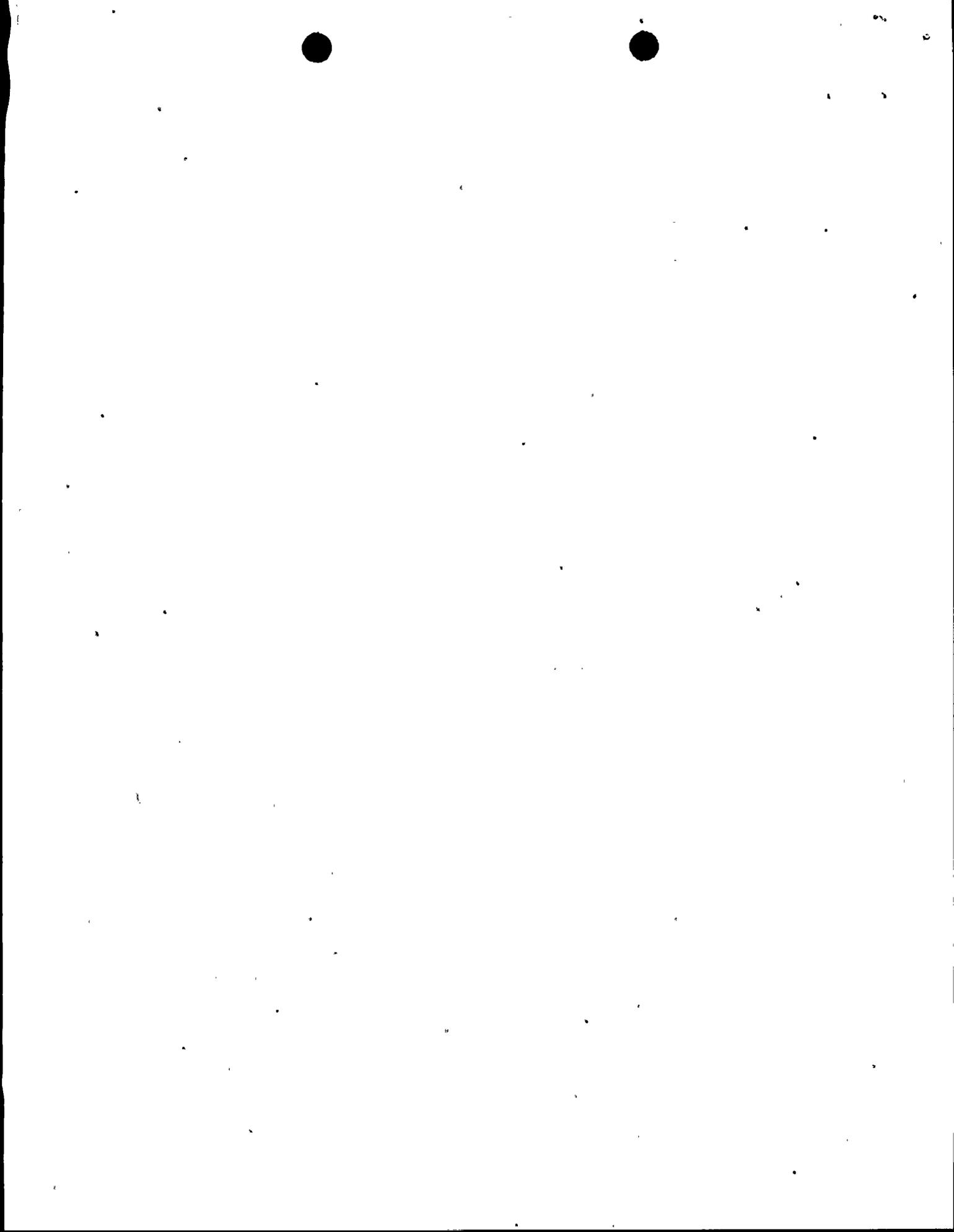
an explanation as to why it is not included in the radii of five miles or less

32. P. 5-21 - The table lists the annual dose to the general population for operation of Nine Mile Point Unit #2. About 80% of the dose is attributable to transportation of nuclear fuel and radioactive waste. A discussion of using longer radioactive fuel decay times to reduce the dose from transportation should be presented.
33. P. 6-1, Section 6.1 - It is stated that "the studies as they have been proposed and are being conducted by the applicant will not provide adequate information to assess the operational effects of the Station on aquatic biota." It is recommended that the applicant begin an extensive water quality evaluation program. The program should include information on dissolved oxygen, phosphate, nitrates, temperature, BOD, pH and turbidity. This type of information will be helpful in future analyses of these facilities and in the analysis of nuclear power plants operated in close proximity. Information developed for the thermal plumes which will result from the operation of three nuclear facilities in close proximity will become increasingly important in the future. The State concurs with the Atomic Energy Commission's requirement that the applicant must develop a monitoring program to provide a clearer definition of the interaction between the FitzPatrick Plant and the two Nine Mile Point facilities.

The State Department of Environmental Conservation would appreciate receiving any reports regarding environmental studies required of, or performed by, the applicant.



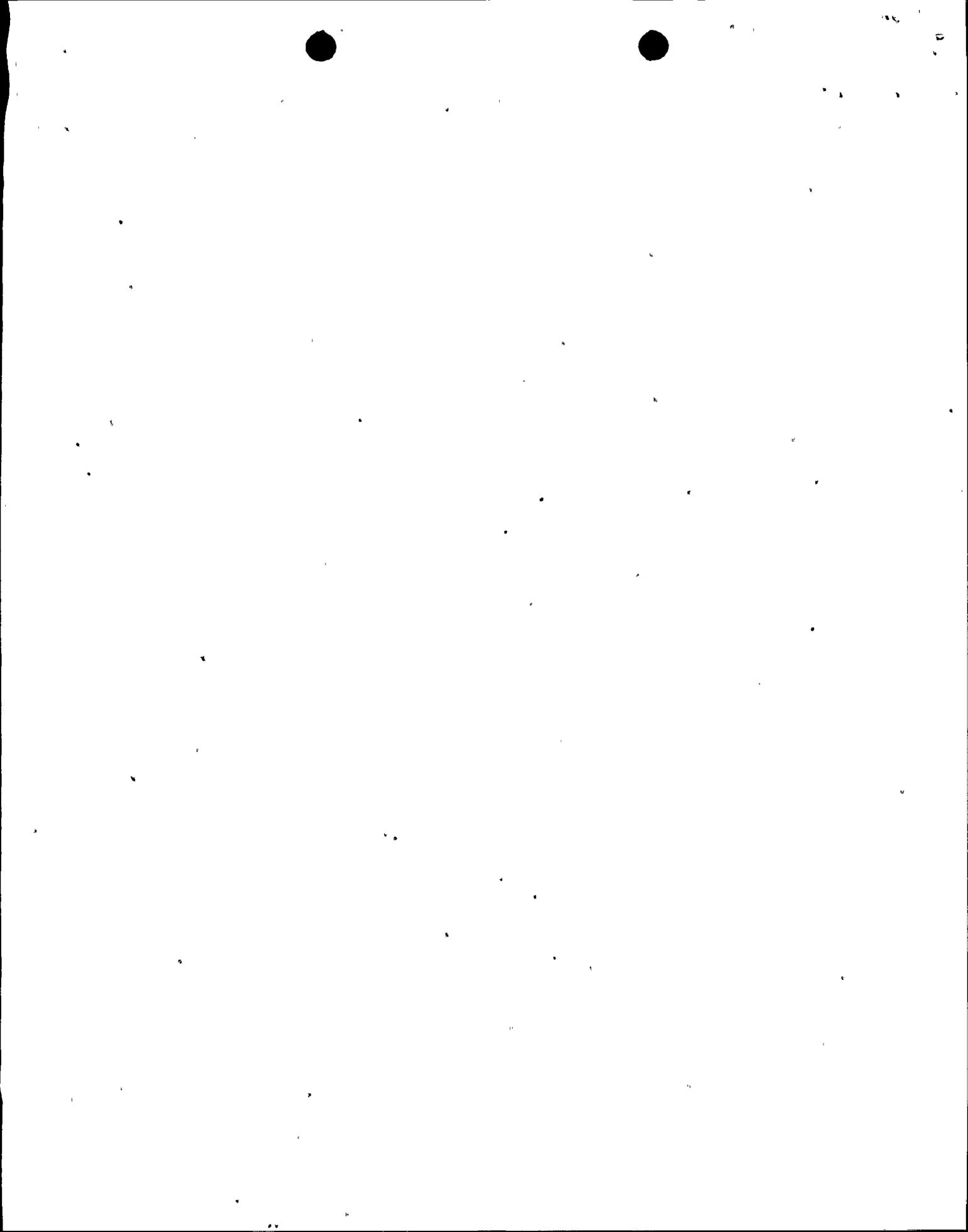
34. P. 6-2 - Besides field sampling for the spring, summer, and fall seasons, the aquatic sampling program should be expanded to include "at-station" sampling of intake water. This will permit the accumulation of data during winter months.
35. P. 6-4 - Intake Screen Monitoring for Fishes - The State concurs with the AEC that the data submitted are inadequate to permit quantitative assessment with sufficient confidence to predict the impact on fish populations in the Nine Mile Point area (P. 5-26). Additional work is needed to assess the true potential magnitude of impingement losses at Nine Mile Point. The applicant should:
- (a) Intensify the monitoring program at Unit 1 and the FitzPatrick Plant as recommended by AEC (Item 6.1g) and relate this to the Unit 2 intake design and data on the local fish population.
  - (b) Review the intake design and fish removal facilities for adequacy in light of the objections raised by AEC.
  - (c) Conduct fish pump survival tests on species abundant in the Nine Mile Point area to determine whether pumping will prove practical as a fish protective measure.
36. P. 6-4 - Section 6.1(f) - The State concurs with the draft statement recommendations for studies on entrainment effects of plankton, small fish, fish eggs and larvae. The impact of anticipated impingement and entrainment losses on the aquatic environment should be assessed.
37. P. 6-5 - Section 6.1.(i) - The recommended comprehensive ecological studies should be correlated and the impact analyzed to the greatest extent practical.



for the combined operation of Unit 2 and the other plants in the area.

The results of entrainment studies should be related to a comprehensive ecological study performed in the vicinity of the site during operations of Unit 1, the Fitzpatrick plant, and eventually Unit 2.

38. P. 6-5 - Section 6.3 - The statement is made that the radiological monitoring plan submitted by the applicant is not adequate and will need to be augmented. More information on the augmentation proposed would be appropriate for the environmental statement.
39. P. 7-4 - The note at the bottom of Table 7.2 indicates that the monitoring program would detect the presence of radioactivity in the environment, in a timely manner such that remedial action could be taken, if necessary, to limit exposure from other potential pathways to man. Some comment should be made as to the time sequence for monitoring and initiating action with respect to an area having a high density of dairy farms.
40. P. 8-9 - The year the proposed plant will be needed is estimated by the applicant to be 1978 and by the staff to be 1981. The difference is caused by the variance in the estimated rate of growth. A recent Federal interagency staff study, "Potential for Energy Conservation" was issued by the Office of Emergency Preparedness. If some of the recommendations of this report were implemented, the time of need for the proposed plant could be delayed. The Environmental Statement should discuss the need for energy conservation and evaluate the effect of a policy of energy conservation on the predicted need for power.



41. P. 9-8 - The statement is made that high temperature gas cooled reactors are beginning to come into commercial use. The reason this alternative was rejected is not adequately discussed.
  
42. P. 9-16, Section 9.2.1 - The use of evaporative cooling towers in the condenser circulating water system was rejected by the Atomic Energy Commission staff, but without adequate substantiating information. For example, the draft statement should present a discussion of potential fog and icing conditions due to the use of evaporated cooling towers. Winds usually blow towards the lake but occasionally prevail from the north or northeast - particularly in January, February, March and September. These winds together with the usually high (80%) relative humidity in the area, could produce fog and icing conditions up to five miles from the site if evaporative cooling towers were used in the condenser circulating water system.

