

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

-----X

THE UNITED STATES OF AMERICA, and	:	
THE STATE OF NEW YORK,	:	Civ. 79-989 (JTC)
Plaintiffs,	:	
-against-	:	
HOOKEER CHEMICALS & PLASTICS CORP.,	:	RESPONSE OF STATE OF
HOOKEER CHEMICAL CORP.; OCCIDENTAL	:	NEW YORK TO COURT
PETROLEUM INVESTMENT CORP.; OCCIDENTAL	:	<u>ORDER OF JULY 10, 1981</u>
PETROLEUM CORP.; THE TOWN OF LEWISTON,	:	
NEW YORK; and THE TOWN OF NIAGARA,	:	
NEW YORK,	:	
Defendants.	:	
(Hyde Park Landfill)	:	

-----X

In an order entered July 10, 1981, the Court has requested the parties to comment on the thesis advanced in the brief of amici curiae, dated June 30, 1981, that the proposed Settlement Agreement does not address the fact of chemical migration into bedrock from the uncontained bottom of the Hyde Park Landfill.*

Despite the allegations of amici curiae, even a cursory analysis of the Settlement Agreement demonstrates that it is a requirement of the Agreement and the intention of the parties to prevent migration of chemical waste through bedrock, however it may occur. The technologies specified in the

*The other points raised by amici have been addressed at length by the parties in the February 10, 1981, court hearing, the February 19, 1981 public hearing, the Response to February 12 Court Order, and the Government's Response to Public Comments, April 3, 1981.

Agreement, and the Requisite Remedial Technology concept it embodies, are designed to isolate all the landfill's chemical wastes from the environment.

I. THE AGREEMENT REQUIRES THE
EXTENT OF CHEMICAL CONTAM-
INATION IN BEDROCK TO BE
DETERMINED BEFORE A REMEDY
IS FIXED.

The Agreement reflects the recognition of the parties and their technical experts that chemicals may well migrate from the bottom of the landfill and thence through bedrock. (See Judgment, pp. 4-5; Addendum I, ¶C(7)(b); February 10 Court Hearing, Tr. pp. 67-68; and Affidavits of Kernan Davis and Paul Counterman, attached hereto.) The Agreement also reflects the parties' technical understanding of the fractured nature of the Lockport Dolomite bedrock. (See Judgment, pp. 4-5; February 10 Court Hearing, Tr. pp. 67-68; Affidavits of Davis and Counterman).

The scope of bedrock contamination from the landfill, however, is not yet known. In order to provide the most effective and comprehensive remedy to contain and clean up bedrock contamination, the nature and dimensions of chemical migration through bedrock must first be determined. The Agreement embodies this simple logic by requiring Hooker to conduct an extensive survey to map the vertical and areal extent of both aqueous and non-aqueous chemical migration in bedrock.

Although a particular technology is specified in the Agreement to deal with the major routes of chemical migration, chemical contamination of deep bedrock may pose unique problems. Any such contamination will undoubtedly consist of gradual seepage of viscous chemicals into the nooks and crannies of bedrock. Without a survey, it is not possible to say whether such contamination is confined to one small area or spread over extensive or discontinuous areas. The design of the technology required to address this deep bedrock contamination will depend upon the extent of the problem to be remedied.

The Agreement specifies proven technologies to address the known major routes of chemical migration.* Remedying deep bedrock contamination, on the other hand, may well require innovative technologies. The Requisite Remedial Technology provision of the Agreement anticipates this possibility and encourages the use of newly-developing remedies. It obligates Hooker to implement the most effective technology available to address the full extent of chemical contamination from the site.

-3-

*Since the current knowledge of the technical experts suggests that most bedrock fractures and major water bearing zones capable of carrying chemical contamination from the Landfill are located no deeper than 15 feet into bedrock, it has been possible to specify technologies in the Agreement to contain and clean up aqueous phase chemical contamination down to that level. (See Davis Affidavit ¶ 9(b)(1).) Should those specified technologies themselves prove inadequate the Agreement requires Hooker to evaluate Requisite Remedial Technology to be applied.

II. UNDER THE AGREEMENT, EVALUATION AND APPLICATION OF REQUISITE REMEDIAL TECHNOLOGY WILL DETERMINE THE MOST APPROPRIATE REMEDY FOR ANY CONTAMINATION BELOW THE TOP FIFTEEN FEET OF BEDROCK.

The Agreement requires Hooker to evaluate any and all Requisite Remedial Technologies to address chemical contamination found for which a technology is not specified in the Agreement itself.*

The Agreement sets a goal and a performance standard: in order "to protect against endangerment to human health or the environment," Hooker must "contain and clean up chemicals, using Requisite Remedial Technology, which have migrated in soils, bedrock, sediment, surface run-off waters, groundwater, and air from the Landfill Site at or above specific plume definition levels." (Judgment, pp. 6-7; Addendum I, ¶ A). Remedial technologies to be considered must be measured against the standards set forth in the Agreement.

Although amici chose to ignore this concept in their brief, it is Requisite Remedial Technology which provides the mechanism to contain and isolate any chemical contamination found

*Requisite Remedial Technology has been explained in detail several times on the record and its general mechanism needs no further explication here. (See February 10 Court Hearing Tr. pp. 16-19; February 19 Public Hearing Tr. pp. 24-26; and Response to Court Order of Feb. 12, 1981, pp. 9-14).

in deep bedrock. Requisite Remedial Technologies must be specifically considered to deal with "aqueous phase liquids ... in regions of the overburden and of the Lockport Bedrock Zone not addressed [by specified technologies] [and] non-aqueous phase liquids from the Landfill Site anywhere in the Overburden or in the Lockport Bedrock Zone." (Agreement, Addendum I, ¶ C[7][b]). Thus, under the Agreement, the problem of deep bedrock contamination must be resolved.

Although the Requisite Remedial Technology to be applied to deep bedrock contamination is not specified at this time, the Judgment lists several technologies to be considered, including tile drainage systems, a grout curtain wall, a system of grouting through controlled fractures, and a system for direct removal of chemicals from the landfill. (See Addendum I, ¶ C[7][b]). The affidavit of Paul Counterman discusses several possible technologies which could be installed.

Once the nature and dimensions of chemical contamination are known, the Agreement obligates Hooker to evaluate the listed technologies, and others which may be developed, to determine the most appropriate technology to be applied to meet the overall goals and performance standards of the Judgment.

III. ALL THE LANDFILL'S CHEMICAL WASTES
WILL BE ISOLATED AND CONTAINED
UNDER THE AGREEMENT, WHETHER OR
NOT THEY ARE EXCAVATED.

Amici contend that the only remedy for the Hyde Park landfill is to excavate it entirely and contain it elsewhere.

While the State agrees that excavation of a hazardous waste landfill may be an appropriate remedy in particular circumstances, the fact that excavation has been chosen to be applied to other landfills does not a priori establish its necessity or its efficacy in all instances.

Excavation is only one possible method for addressing the real issue, which is to apply a technology to isolate the Hyde Park wastes from the environment. Excavation contains a dump's chemicals by creating a new landfill with a relatively impermeable "bottom." As long as the goal of containment is achieved, it is immaterial whether the chemicals are isolated on-site or off-site. There is no need to excavate if technology can be applied to contain the wastes -- that is, to construct a relatively impermeable barrier -- on the site. Through Requisite Remedial Technology, the Agreement will achieve this goal of sealing off the Hyde Park landfill's wastes from the environment.

In support of their technical contention that excavation is the only remedy, amici rely entirely upon the decision of the Illinois Supreme Court in Village of Wilsonville v. SCA Services, Inc. (No. 52885, Supreme Court of Illinois, May 22, 1981). The court's opinion and the record in Wilsonville suggest that the facts of that case are so different from the facts at Hyde Park as to render futile any attempt at comparison between the two sites.

The Wilsonville site was in operation for about two years, from 1976 to 1978. The Hyde Park site was used for over twenty years. No evidence of past or current chemical migration away from the site exists at Wilsonville, while at Hyde Park, it is known that wastes have escaped from the landfill to contaminate the environment.

The wastes deposited at Wilsonville were all in metal containers except for some contaminated pipes and building material which were bagged. The containers were deposited in some fifteen 50' x 100' trenches no more than ten to twelve feet deep. Soil and other non-toxic fill were liberally spread on top of and around each layer of containers. The trenches were filled to ground level. In contrast, the Hyde Park landfill is filled with a conglomeration of toxic wastes, only some of which were disposed in barrels. Much of the wastes were dumped in bulk, and in liquid, solid and semi-solid form. Indeed, Hooker's own boring logs describe a "slurry" of mixed chemicals

as deep as 26 feet below the surface of the fill. (See Exhibit A). The 15-acre dump looms many feet above ground level. This is not a neat array of containerized chemicals waiting to be dug up and stacked elsewhere, but an enormous and dangerous mound of toxic sludge and muck: over 80,000 tons of hazardous waste which has been in the ground for almost thirty years.

Finally, an extensive abandoned coal mine lies underneath the Wilsonville trenches. The Court found that this undermining poses the constant danger of ground subsidence, threatening to cause faults, to disturb the trench system, and thus to facilitate chemical migration. In contrast, it has never been suggested that the Hyde Park landfill lies atop a giant hole in the ground.

All of these factual differences suggest that it would be quite a different logistical matter to move the Hyde Park landfill. The affidavit of Paul Counterman sets forth in detail the possible difficulties of excavation at Hyde Park.*

*It should be further noted that excavation of the site itself does not remedy the problem of offsite contamination. (See Counterman Affidavit, ¶ 15.)

The Agreement proposed here will isolate, contain and clean up chemicals in the Hyde Park landfill as well as chemicals migrating from the landfill without relying upon immediate excavation, with its possible attendant difficulties.

IV. THE SETTLEMENT AGREEMENT PROTECTS
THE HEALTH, SAFETY AND WELFARE OF
THE PEOPLE AND OF THE ENVIRONMENT.

The threat to the people and to the environment posed by the Hyde Park landfill is clear. The toxic nature of the chemical wastes dumped there and the potential for migration of those chemicals are well recognized by the plaintiffs in this action. That is exactly why this lawsuit was brought: to attack the danger posed by the landfill and to enforce a solution to it by the party responsible. The Settlement Agreement now before this Court will accomplish what the State's complaint set out to obtain: the isolation, containment, and clean-up of chemical wastes in and emanating from the landfill so that they no longer pose a threat to the people and to the environment, including the Niagara River.

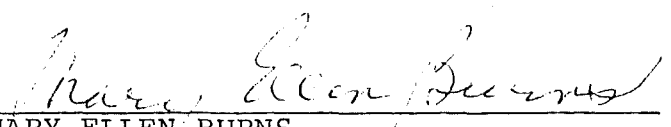
X The State's obligation is to protect and to safeguard the health, the safety and the wellbeing of its people, its environment, and its resources. It is in furtherance of that

obligation that the State of New York entered the Settlement Agreement in this case; it is pursuant to that same obligation that the State now urges the Court to approve it.

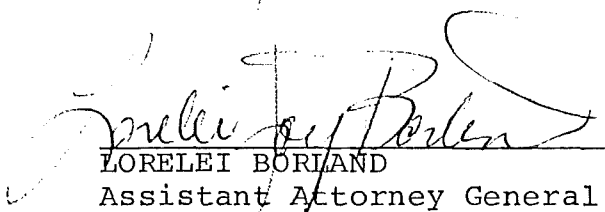
Dated: New York, New York
July 23, 1981

Respectfully submitted,

ROBERT ABRAMS
Attorney General of the State
of New York
Attorney for Plaintiffs
By



MARY ELLEN BURNS
Assistant Attorney General



LORELEI BORIAND
Assistant Attorney General
2 World Trade Center
New York, New York 10047
(212) 488-3290

OW 9-78

<u>From</u>	<u>To (Feet)</u>	
0 (606.3 - 601.3)	5	Coarse gravel fill and black chemical residue
5 (601.3 - 596.3)	10	Stiff silty clay and black chemical residue Blowcounts 3/15" 1/3"
10 (596.3 - 591.3)	15	Soft silty clay, some 1/4" stones, black organic-like residue and light coloured sugar-like crystals Blowcounts 9/6" 5/6" 1/6"
15 (591.3 - 586.3)	20	Black chemical residue with medium sand, metal barrels Blowcounts 7/6" 31/6" 100/2"
20 (586.3 - 580.3)	26	Black chemical slurry with medium sand Blowcounts 28/6" 75/5"
26 (580.3)		Refusal - probably concrete rubble

EXHIBIT "A"

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,
THE STATE OF NEW YORK

Plaintiffs,

vs.

Civil Action No. 79-989

HOOKEE CHEMICALS & PLASTICS CORP.;
OXY CHEMICAL CORPORATION; HOOKEE
CHEMICAL CORPORATION; OCCIDENTAL
PETROLEUM INVESTMENT CO.; OCCIDENTAL
PETROLEUM CORPORATION; THE TOWN OF
LEWISTON; THE TOWN OF NIAGARA,
(Hyde Park Landfill).

AFFIDAVIT OF

KERNAN DAVIS

Defendants.

STATE OF NEW YORK)
) ss.:
COUNTY OF ALBANY)

Kernan Davis, being duly sworn, states:

1. I reside in the Town of Schodack, Rensselaer County,
State of New York.

2. I am employed as an engineering geologist by the
New York State Department of Environmental Conservation, in the
Division of Solid Waste, Bureau of Hazardous Waste Technology.

3. A brief resume is attached, outlining my education and
experience. Of particular background interest in the instant
case would be my employment as an engineering geologist for the
Niagara Power Project, from 1958 to 1961. During those four
years, I became intimately acquainted with the geology and
hydrology of the Niagara Falls area as a part of my daily work.

I worked with the Lockport dolomite and the underlying formations. I scaled the gorge face in the vicinity of the power project many times, examining the rock conditions. I collected and interpreted groundwater data in the vicinity. When Richard Johnston came to Niagara Falls to gather information for the preparation of his Bulletin GW-53, "Ground Water in the Niagara Falls Area, New York with Emphasis on the Water-Bearing Characteristics of Bedrock", I gave him guidance, assistance and arguments (see page 7 of his Bulletin, "Acknowledgements"). Some of his words in print appear to have sprung from my ideas.

4. I was present at many of the negotiation meetings in the instant case. My objective was to have logical geological bases be used for whatever agreements could be hammered out by lawyers for the parties.

I believe I have succeeded.

* 5. In the absence of detailed knowledge of the hydro-geology of any hazardous waste site, no design of remedial measures can be accomplished. At the same time, a general knowledge of the site can lead parties to agree upon performance standards, terms and conditions to be met, in order to set up appropriate programs of action. By execution of those programs, sufficiently detailed information would be gathered and analyzed so that design of remedial measures could be accomplished. That, as I perceive it, was done in the instant case.

6. The issues and concerns raised in Affidavits by E. Grant Anderson and Edward W. Kleppinger were known to me and

what
did?

were among the issues raised by me in negotiations and were addressed and considered by the parties in reaching their agreement. The issues were, in my opinion, resolved in a manner appropriate to restore and protect the area environment.

7. I raised the issue of direction of groundwater flow. Through a series of observation wells, the flow directions were learned. The Barrier Collection systems take this into account (see Addendum 1, paragraphs D(1) through D(8)).

8. I raised the issue of control of leachate migration to depths beyond fifteen feet below the surface of the bedrock. It is not known, to what extent, laterally and vertically, the leachate has already migrated. Before any remedial measures can be designed, it is necessary to gather facts about the hydrogeology and the extent of leachate migration. Subparagraph C of Addendum I provides for such fact-gathering. The fifteen-foot depth was chosen as a limit, based upon Johnston's Bulletin GW-53, upon the data collected to date and upon our combined judgments. I agree, barriers must extend downward to at least that depth. I believe there is not now sufficient information to determine what measures would be appropriate below that level. Therefore, Subparagraph C of Addendum I was prepared to provide factual bases for constituting programs which would be appropriate to meet the objectives of the agreement.

59
9. Some of the concepts and contents of the Affidavits of Kleppinger and Anderson are inapt to such an extent as to render the arguments laid thereupon invalid.

(a) As Amici pointed out, the direction in which groundwater flows is a basic factor in any landfill remediation analysis.

(i) The northwestward groundwater flow direction has been determined by on-site observations, by actually measuring the piezometric pressures in the bedrock and the overburden, and mapping the results at a scale commensurate with the data. Based upon this information, the Overburden Barrier-Collection System installation was planned and the Bedrock Barrier-Collection systems were tentatively proposed. I reviewed this procedure and found it to be appropriate for the purposes of this agreement.

(ii) Edward Kleppinger determined the direction of groundwater flow by describing the location of the site over the telephone to Dick Johnston, who (twenty years absent from Niagara Falls) is alleged to have said that the groundwater flow was eastward, toward the power Authority conduits, which are buried in the ground more than four thousand feet east of the landfill site. (Kleppinger Affidavit, item 44). In my opinion this is not a reliable determination for the purposes of this case.

(iii) E. Grant Adnerson determined the direction of groundwater flow to be westerly, northerly and possibly easterly away from the site (items 34 and 35 of his Affidavit). On pages 10 through 13 of his Exhibit B, he shows how he determined these groundwater flow directions. He took Johnston's "Figure 14 - Inferred direction of ground-water movement in the upper water-

bearing zones of the Lockport dolomite in the vicinity of Niagara Falls "(published at a scale of one inch equals two miles), plotted the location of the landfill on it, and interpreted what he could see (page 12 of Anderson's Affidavit). In my opinion this is not a reliable determination for the purpose of the instant case because this regional map is too general to accurately determine groundwater movement at a specific site.

(iv) Johnston, on page 55 of his Bulletin GW-53, expressed some of his concerns about his ability to accurately determine groundwater movement directions. Prior to the start of the investigation, he had assumed that water in the bedrock in the western part of the Niagara Falls area moved westward, to discharge into the gorge. He could find practically no evidence of seepage into the gorge to support that idea. He found very few wells in that area suitable for the necessary water-level observations. The only accessible wells were those which I had been working with, in the vicinity of the Power Project. Even with my well data, we could not determine the width of the area from which groundwater was flowing toward the gorge. Therefore, he presented his surmised or inferred directions on a small scale map that permits the plotting of comparatively little detail. Considering the purpose of his Bulletin, to describe the general occurrence, availability and quality of groundwater and the hydrogeology of a five hundred fifty square mile area, not of any particular site in that area, in my opinion this was a reliable method for those purposes only.

(v) Therefore, one can see that the Amici Curiae did not aptly determine the direction of groundwater flow and one may conclude that all arguments based upon said flow directions are rendered invalid to the extent to which they rely upon such determinations.

(b) Because Kleppinger Affidavit items 17 and 23 overstate and oversimplify and erroneously describe the structural character of the bedrock, all subsequent arguments resting upon these bases fail. The spatial distribution of the fractures in bedrock is a primary factor in considering groundwater flow characteristics, because it provides the system of openings through which fluids could flow. The ability of the bedrock to convey fluids, the location of the observation wells and the possible depth of penetration by fluid are dependent upon this spatial distribution.

(i) Throughout the negotiating process, I tried to determine the spatial distribution of fractures in the Lockport dolomite by recollection of my work in the Niagara Falls area, by reading Bulletin GW-53 (especially pages 17 and 22 through 27), by analysis of on-site and near-site boring logs and by examining some rock cores myself. These sources do not convey sufficient information to design the best remedial measures. On the other hand, they are sufficient to provide a basis for agreement to perform certain surveys, tests and studies and to tentatively support a purge well system as a possible remedial measure. They

are sufficient to form concepts about remedial measures. In the top few yards of bedrock (say fifteen feet) many bore holes and rock cuts in the Niagara area evince both lateral and vertical fracturing. Below that depth, the rather sparse data sources suggest very few open vertical fractures and a few clusters of bedding-plane fractures. From my own experience, I recall the occurrence of a relatively less permeable zone, at about fifty to sixty feet above the Rochester shale, within the Lockport dolomite, of fine-grained muddy bituminous dolomite beds. I know of no boring logs near the site that have penetrated deep enough to encounter this zone, but I proposed that deep explorations be made to find this zone and to test its ability to act as a natural barrier to downward movement. The boring required under the Agreement should accomplish this purpose.

It is generally agreed that the upper 15 feet of bedrock is very pervious. It would convey water vertically as well as horizontally. { Below this upper zone, lateral flow would be more dominant than vertical flow, because the vertical joints have been found to be more tightly closed at depth than at the surface, whereas some bedding plan fractures are partially open throughout the depth of the Lockport formation (see Bulletin GW-53, pages 22 and 23).

(ii) E. Grant Anderson's knowledge of the fractured condition of the Lockport dolomite stems from his experience with the formation as it occurs in the Niagara Escarpment in the Province of Ontario, Anderson Affidavit, item 18. The lithological

and structural details of bedrock vary from one part of a formation to another, across distances. Familiarity with a rock formation in one locale does not familiarize one with that same formation in another area, unless the details are similar. At various times in the 1950s and 1960s, I observed some road cuts and a quarry in that Canadian portion of the escarpment where the dolomite is highly fractured. It is less severely fractured on the American leg of the escarpment, by my own observations. It is less weathered and fractured inland from the gorge. I further have observed, in addition to the geographic variances noted above, a vertical difference in the density of fracture occurrence, as described by Johnston in Bulletin GW-53.

(c) The presence and significance of water-bearing zones and the capability of the bedrock to transmit water are dependent upon the occurrence of fractures in the bedrock.

The hydraulic gradient (that is, the difference in groundwater pressure between 2 points) is another very important factor, because it causes the rate of flow and the direction of flow. These must be determined with a degree of accuracy commensurate with the level of planning of remedial measures.

No estimate of permeability (or hydraulic conductivity), velocity or gradient should carry any weight of argument beyond the hypothetical realm, unless it is based upon on-site, permeability and well behavior tests, actually performed in the field.

(i) The calculations in the Anderson Affidavit, Exhibit B, Section 2, are not based upon sound data. No on-site tests were made by him in order to conclude that "... permeability of the rock will be at least 10^{-4} cm/sec." All calculations and concepts based upon said permeability fail due to this lack of basis.

(ii) The Kleppinger Affidavit exhibits no sound basis for arguments regarding groundwater flow characteristics.

(iii) Johnston's Bulletin GW-53, page 32, warns the reader against laboratory tests as bases for learning groundwater flow characteristics of bedrock. The purpose of Johnston's work, it must be remembered, was to describe the water-supplying ability of the formation in this general area. His work is not sufficiently detailed for the purposes of the instant case.

(iv) The purpose of the Agreement Addendum I, Paragraph C, is to provide sound geotechnical bases for all decisions regarding remedial measures to be employed in the bedrock: to measure the factors, such as velocity, gradient, and permeability, at and near the instant site.

GO ^{know} ^{6/15/84} ^{rep} 10. [All the concerns expressed by Amici were considered and weighed during negotiations.] The principal geotechnical issue between the parties on the one side and the Amici Curiae on the other, is their respective willingness to decide upon a particular remedial measure in the absence of geotechnical data sufficient to make that decision. In my opinion it is not wise to recommend

char. for
bulletin
per

a best alternative at this time, in the absence of sufficient information about the detailed bedrock hydrogeology at the Hyde Park Avenue site. I do support the position taken in the agreement, to learn enough about the hydrogeology by performing surveys and tests before reaching a firm decision as to the best remedial measure.

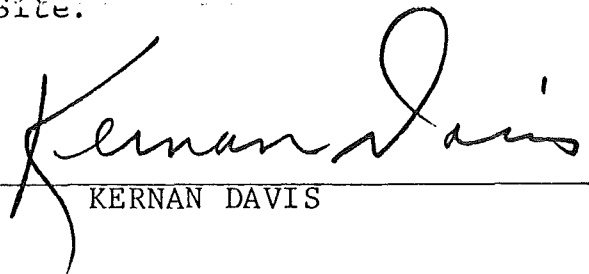
11. The Amici Curiae have provided analyses of groundwater flow direction, fracturing, stratigraphy and permeability of the bedrock which are inapt as bases for the propositions they have proffered. As my analyses have demonstrated, Amici's arguments are therefore so poorly founded that they must fail.

12. The Amici Curiae brief compares a recent Opinion of the Supreme Court of Illinois, in the case of Village of Wilsonville vs. SCA Services, with the instant case. Legal corollaries notwithstanding, the physical difference between the landfill site in Illinois and the Hyde Park Avenue site is so striking as to nullify any comparisons relating to the physical aspects of the sites.

According to the Opinion, the Wilsonville site is situated in an area of rock and soil foreign to New York State. The general geologic profile of that site consists of 10 feet of windblown silt and clay (loess), underlain by 40 to 65 feet of glacial till, underlain by shale. At a depth of 312 feet, half the rock was mined out, so that only pillars of coal remain to prevent land subsidence. Geological expert witnesses warned of

the likelihood of pillar failure and subsequent land subsidence, thereby permitting water to get into the landfill trenches, eventually rise to the surface, overflow and contaminate the ground around the site. The Illinois Court did not disturb that finding.

No such geologic conditions, no similar geologic conditions, exist at the Hyde Park Avenue Site.


KERNAN DAVIS

Sworn to before me this
20th day of July, 1981



MITCHELL GOROSKI, JR.
Notary Public, State of New York
Qualified in Albany County
No. 01-6604360
Commission Expires March 30, 1982

RESUME

KERNAN DAVIS

EDUCATION

1955 University of Buffalo, B.A. in geology and geography

{ Graduate studies at Pennsylvania State University and Miami
University at Oxford, Ohio

{ Special Short Courses offered by Massachusetts Institute of
Technology, The Engineer School at Fort Belvoir and the
University of California

Public Administration as a part-time student at the State
University of New York at Albany

MEMBERSHIP OR PARTICIPATION IN PROFESSIONAL SOCIETIES

The Geological Society of America, The American Geophysical
Union, The American Association for the Advancement of Science,
The New York State Geological Association, Capitol District
Geologist, the New York Chapter of the American Institute of
Professional Geologists, American Water Resources Association,
The American Society for Public Administration, The New York
Academy of Sciences

EXPERIENCE

U.S. Army, as a Terrain Analyst for Engineer Technical Intelli-
gence Units in Washington, D.C. and in Alaska
as an Engineering Geologist for the Niagara Power Project, for
the Buffalo District Corps of Engineers, for the U.S. Department

of Agriculture, Soil Conservation Service, New N.Y. Conservation
Dept. as a Land Examiner for the U.S. Department of the Interior,
Bureau of Land Management in Alaska

Presently employed as an engineering geologist for the NY State
Department of Environmental Conservation, Solid Waste Division,
Hazardous Waste Bureau, Special Projects Unit

PUBLICATIONS

All reports are propriatory and unpublished.

FIELDS OF SPECIALIZATION

Land and Water Resources Management and Planning, with special
emphasis on surficial ^{Soils}geology, glacial ^{soil}geology, groundwater
hydrology, geomorphology, ^{soils}geophysics, ^{remote sensing}erosion and sedimentation
movement ^{soils}rock + soils

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF NEW YORK

UNITED STATES OF AMERICA,
THE STATE OF NEW YORK

Plaintiffs,

vs.

Civil Action No. 79-989

HOOKER CHEMICALS & PLASTICS CORP.;
OXY CHEMICAL CORPORATION; HOOKER
CHEMICAL CORPORATION; OCCIDENTAL
PETROLEUM INVESTMENT CO.; OCCIDENTAL
PETROLEUM CORPORATION; THE TOWN OF
LEWISTON; THE TOWN OF NIAGARA,
(Hyde Park Landfill).

Defendants.

AFFIDAVIT OF
PAUL R. COUNTERMAN

STATE OF NEW YORK)
) ss.:
COUNTY OF ALBANY)

Paul R. Counterman, being duly sworn, states:

1. I reside in the Town of Nassau, Rensselaer County, New York.

2. I am presently employed by the New York State Department of Environmental Conservation, Division of Solid Waste, Bureau of Hazardous Waste Technology as Supervisor of the Chemical Technology Section. My office is located in Room 401, 50 Wolf Road, Albany, New York 12233.

3. I received a Bachelor of Science degree in Chemical Engineering and a Master of Engineering degree in Environmental Engineering, both from Rensselaer Polytechnic Institute, Troy, New York. For more details of my education and experience, please refer to my resume appended hereto.

4. I have been working full-time in the field of hazardous waste for over seven years. I have had considerable experience in investigating historic hazardous waste disposal sites and in evaluating remedial measures.

5. I have been involved with the investigation and remediation of the Hyde Park site since 1976, and am fully familiar with the site and the surrounding area. I directly participated in all technical sessions of the settlement negotiations.

6. I believe that the proposed Stipulation and Judgment Approving Settlement Agreement adequately addresses the environmental problems currently emanating from the Landfill Site and currently present in the Hyde Park-Bloody Run Area.

7. I have read the Brief of the Ecumenical Task Force of the Niagara Frontier, Inc. Amicus Curiae and Pollution Probe, Operation Clean-Niagara Amici Curiae, including the Affidavits of Edward Kleppinger and Grant Anderson.

8. I have read the affidavit of Mr. Kernan Davis, my co-worker, and I fully agree with the statements contained therein.

9. I, too, have long had concern for the potential migration of toxic organic chemicals from the Hyde Park Landfill Site through the bedrock into the Niagara River and thence into Lake Ontario. I have known of the presence of non-aqueous phase organic chemicals in observation well 18-79 roughly 500 feet from the landfill site and 50 feet into bedrock. I believe that the proposed Settlement Agreement fully addresses this concern.

10. I firmly believe that the proposed Settlement Agreement fully addresses all of the environmental concerns raised in the

brief of the Amici, including the migration of organic chemicals through the bedrock into the Niagara River and Lake Ontario.

11. The Amici and their consultants did not give due consideration and weight to the requirements of Addendum I, Paragraph C of the Settlement Agreement which addresses primarily bedrock contamination. The Paragraph requires Hooker to do extensive studies which will result in a three dimensional mapping of the presence of aqueous phase contamination and of non-aqueous phase contamination (Addendum I, C (1) through C (5)). Additionally, Hooker is required to conduct pumping tests (Addendum I, C (6)) which, in conjunction with other site specific information, will provide detailed site specific hydrologic data. Taken together, this new data will form a sound understanding of the geology and hydrology at the Hyde Park Site. Addendum I, C (7) then requires Hooker to conduct a study to determine what Requisite Remedial Technology is required to address the chemicals in the Lockport Dolomite. Certain technologies that must be studied are set forth in Paragraph C (7), but this list is not inclusive. Excavation and reburial would be a technology which could and should be included in this study. Addendum I, Paragraph C (8) specifies an extensive and inclusive list of information that Hooker must provide at the conclusion of the study. These tests and studies will form the information base on which the standards of Requisite Remedial Technology as detailed in Paragraph 4 of the the Judgment can be applied.

Concurrently with Hooker's technology studies, the State and Federal Governments will on their own be investigating remedial technologies which may be applicable at this site.

If Hooker and the State/Federal Governments cannot agree on the Requisite Remedial Technology, the matter will be brought back to the Court for resolution.

X Clearly, the Settlement Agreement does adequately address chemical migration from the site through the bedrock.

* 12. While generalized macroscopic hydrologic and geologic data concerning the Lockport Dolomite exists for the Niagara Falls area, sufficient detailed data on which to base a remedial plan for this particular site does not exist. The proposed Settlement Agreement requires this information to be developed.

13. Rather than "patchwork remedial proposals" as stated by the Amici Curiae in their brief, the proposed Settlement Agreement's remedial plans, including the required studies and the implementation of Requisite Remedial Technology, fully address all continued migration from the site. Certain specific remedial construction is required by the Settlement Agreement and it is this specified construction that the Amici have focused on. Other remedial construction will be required as a result of extensive testing and studies. These remedial actions seem to have been ignored by the Amici.

14. Dr. Kleppinger makes the broad statement that "no practical method exists for sealing off the underlying porous

bedrock at this site for the life of the hazard" (see item #26 of Dr. Kleppinger's affidavit). He does not discuss which technologies he considered and why he rejected each technology. Hooker is required to conduct studies of technologies that could halt migration of aqueous and non-aqueous phase liquids through the bedrock (see item #11 above). Technologies such as fracturing the bedrock either hydraulically or with explosives and then grouting the fractured zone with modified cement or other specially blended grouting materials could readily prove to be feasible methods of fully halting contaminant migration of both chemicals currently in the bedrock and in the landfill site over both the short and long term. Dr. Kleppinger does not seem to have given due consideration to such technologies.

15. Supposing that the hydrologic and geologic conditions claimed by Dr. Kleppinger and Mr. Anderson were in fact true, then the excavation and reburial of chemical wastes and contaminated overburden at the Hyde Park Site would not be sufficient. Considerable quantities of toxic chemicals would be present in the extensive highly fractured bedrock (a central claim by both), and would be moving toward Lake Ontario. The same studies as required by the proposed Settlement Agreement, particularly Paragraph C of Addendum I, would be required to determine the nature, extent, and movement of the existing bedrock contamination, the potential impact on the Niagara River and Lake Ontario, and the remedial measure that would best address the problem. A standard such as that of Requisite Remedial Technology in Paragraph 4 of the Judgment would have to be applied to the accumulated

data to determine the appropriate remedial response. The remedial action thus required to remove or contain the toxic organic chemicals currently present in the bedrock may in fact more than adequately obviate the excavation and reburial recommended by the Amici Curiae. Thus, under the site scenario claimed by the Amici Curiae, one would conclude that the careful, detailed studies set out in the proposed settlement would be the logical way to proceed.

16. The risk of accidental exposure of the surrounding population to toxic organic chemicals and of accidental environmental releases during excavation and reburial is very great. The extreme toxicity of 2, 3, 7, 8 - tetrachlorodibenzo-p-dioxin (TCDD hereinafter) and of the large volume of TCDD is of particular concern. While not as extremely toxic, many other chemicals in the site are also capable of causing serious health and environmental problems. One must consider the risk of human and environmental exposure associated with excavation and reburial relative to the risk associated with containment in-place by a given engineering solution. Excavation and reburial would be a very major construction operation requiring the movement of ⁱⁿ excess of 500,000 cubic yards of contaminated materials. If containment in-place can be adequately accomplished (see item #11), it would be unwarranted to subject the human population and the environment to what would most likely be the considerably greater risk of excavation. Clearly, serious decisions such as these should be made only after a sufficient data base has been developed and analyzed, and the various possible remedial actions and related

benefits and risks have been thoroughly assessed. It is precisely this information which the proposed Settlement Agreement would cause to be created through operation of Addendum I, Paragraph C and Judgment Paragraph 4.

Paul R. Counterman
Paul R. Counterman

Sworn to before me this
20th day of July, 1981

Carl G. Dworkin

CARL G. DWORKIN
Notary Public, State of New York
No. 4500773
Qualified in Albany County
Term Expires March 30, 1983

Paul Richard Counterman

RD #1

Averill Park, NY 12018

Phone: Home: (518) 477-7398

Office: (518) 457-6605

Professional Experience:

April 1974 - Present Employed by the New York State Department of Environmental Conservation, Division of Solid Waste Management in the Hazardous Waste program from its inception in positions of increasing responsibility as outlined below:

Chief, Chemical
Technology Section
December 1980 - Present

The Technology Section which I formerly headed was divided into several new sections. In my current position I am responsible for a group whose primary duties include:

- (1) developing new regulations for hazardous waste treatment, storage and disposal facilities for identifying and listing hazardous waste;
- (2) evaluating specific waste streams to determine if they are hazardous;
- (3) reviewing detailed engineering plans and reports for operating hazardous waste treatment, incineration, and storage facilities; participating in public hearings and developing permits for these facilities; and
- (4) monitoring the operation of permitted facilities to ensure their compliance with permits and State regulations.

The Section is staffed with chemists, chemical engineers, sanitary engineers, and economists.

Chief, Technology
Section
Nov. 1978 - Dec. 1980

In this position, I headed up a section which was responsible for all the technical aspects of the States hazardous waste program. In addition to the duties of my present section, this section was responsible for: reviewing detailed engineering plans and reports and developing permits for operating land disposal facilities; conducting detailed analysis of environmental impacts of historic hazardous waste disposal sites and developing remedial engineering plans for same.

Senior Sanitary Engineer
Nov. 1976 - Nov. 1978

Assistant Sanitary
Engineer
April 1974 - Nov. 1976

Had primary responsibility for the development and implementation of a state wide hazardous waste management program. Conducted preliminary investigation of hazardous waste generation, and of treatment and disposal technology. Developed new rules and regulations for hazardous waste treatment and disposal facilities. Made detailed evaluations of proposed treatment and disposal facilities for industrial and hazardous waste. Inspect and monitor operating and closed facilities. Supervise three engineers conducting an in-depth state hazardous waste inventory. Developed proposed new legislation. Was part of inter-disciplinary toxic substance effort.

Research Assistant
June 1970 - Oct. 1970

Fresh Water Institute, Smith Bay, Putnam Station New York. Constructed and operated a small ambient air quality monitoring station. Participated in water quality sampling and analysis program.

Education:

Bachelor of Science

Major: Chemical Engineering
Rensselaer Polytechnic Institute, June 1970

Master of Engineering

Major: Environmental Engineering
Rensselaer Polytechnic Institute, May 1973
Emphasis on air and water pollution with background also in ecological studies.
Thesis: The Inhibition of the Oxidation of Sulfur Dioxide in Alkaline Scrubbing Liquors.
Graduate study was supported by a Rensselaer Scholarship and a National Science Foundation Research Assistantship.

Professional Licenses:

Licensed Professional Engineer in the State of New York (license number 53715).

Publications:

New York State Department of Environmental Conservation Publication "Preliminary Study: Hazardous Waste in New York State".

Paper on master's thesis presented before the Division of Air, Water, and Waste, 164th National American Chemical Society Meeting, August 1972.

Personal Data:

Born January 14, 1949/
Single
Height - 6'
Weight - 175 lbs.
Place of Birth - Wilkes-Barre, PA

Hobbies and Interests:

Contra and country dancing, playing music,
gardening, hiking, cross-country skiing,
botany, and environmental issues.

College Honors and
Activities:

Tau Beta Pi (national engineering honorary
society), Phalanx (non-scholastic campus
honorary society), Who's Who in American
Colleges and Universities, Graduate Student
Council, Student Senate, A.I.Ch.E. (vice-
president), Protect Your Environment (co-
director), Student-Faculty Advisory Committee.

References:

Will be furnished upon request.

STATE OF NEW YORK
COUNTY OF NEW YORK } ss.:

....., being duly sworn, deposes and says
that he isin the office of the Attorney General of the
State of New York, the Attorney for.....herein. On the.....
day of....., 19 he served the annexed upon the following named persons:

Attorney in the within entitled.....by depositing a true and correct copy thereof, properly
enclosed in a post-paid wrapper, in a post-office box regularly maintained by the Government of the United States at TWO WORLD
TRADE CENTER NEW YORK, N.Y. 10047 directed to said Attorney at the address within the State designated by.....
for that purpose.

Sworn to before me this

.....day of....., 19

.....
Assistant Attorney General of
the State of New York

RECEIVED SEP 04 1981

CELH

Sir:
Please take notice that the within is a true copy of
duly filed and entered in the office of the Clerk
of _____ County, on
the _____ day of _____, 19

Yours, etc.,
ROBERT ABRAMS,
Attorney General,

Attorney For

Office And Post Office Address
Two World Trade Center, New York, N.Y. 10047
To _____, Esq.

Attorney for

Sir:
Please take notice that the within

will be presented for settlement and signature herein
to the Hon.

one of the judges of the within named Court, at

in the Borough of _____
City of New York, on the _____ day of _____

Dated, N.Y., _____ 19 _____, at _____ M., 19

Yours, etc.
ROBERT ABRAMS,
Attorney General,

Attorney For

Office And Post Office Address
Two World Trade Center, New York, N.Y. 10047
To _____, Esq.

Attorney for

Civ. 79-989 (JTC)

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NEW YORK

THE UNITED STATES OF AMERICA, and
THE STATE OF NEW YORK,

Plaintiffs,

-against-

HOOKEr CHEMICALS & PLASTICS CORP.,
HOOKEr CHEMICAL CORP.; OCCIDENTAL
PETROLEUM INVESTMENT CORP.;
et al.,

Defendants.

(Hyde Park Landfill)

RESPONSE OF STATE OF NEW YORK
TO COURT ORDER OF JULY 10, 1981

ROBERT ABRAMS,
Attorney General

Attorney for.....Plaintiffs.....

Office And Post Office Address
Two World Trade Center, New York, N.Y. 10047
Tel. 212-488-3290

Personal service of a copy of

within.....

is admitted this.....day of

.....19