

# KENNETH L. SCHELLIE, A LANDSCAPE ARCHITECTURAL RECLAMATION PIONEER<sup>1</sup>

J.B. Burley<sup>2</sup> and A.M. Bauer<sup>3</sup>

**Abstract:** Reclamation specialists are often interested in historical perspectives concerning the practices, concepts, and projects of individuals who practiced surface mine reclamation prior to the Surface Mine Reclamation Act of 1977. One such individual was the late Kenneth L. Schellie, a landscape architect and planner who practiced in the American Midwest. This paper describes and recognizes his contributions in reclamation planning and design. Beginning in 1948, he consulted for the National Sand and Gravel Association, the National Industrial Sand Association, and companies and institutions affiliated with these institutions. He also cooperated with the University of Illinois, training landscape architects in surface mine reclamation. Kenneth edited or advised authors concerning the publication of at least ten books addressing surface mine site utilization and landscape rehabilitation from 1963 to 1977. He promoted the idea of surface mining as just a transitional land-use, the concept of simultaneous excavation and rehabilitation, the importance of mining operations to create land for post-mining land-uses, the idea that the post-mining land could be more valuable than the pre-mining landscape, the concept of multiple post-mining land-uses, and the important of surface mining planning resulting in fewer delays, efficient mining, and increased profits. In addition, Mr. Schellie applied his training as a landscape architect with his professional experiences to select vegetation suitable for reclamation applications, described the ecology of the sand and gravel surface mine, presented key principles in land development of surface mines, illustrated the environmental impact process related to surface mines, and identified basic land-use controls associated with surface mining. Much of this work was accomplished before landscape reclamation was of great national concern.

**Key Words:** site planning, land-use planning, landscape planning, environmental design, landscape architecture history, reclamation history

## Introduction

Knowledge, insight, and understanding concerning the origins of planning, design, management, and experimentation precedents are important aspects for one to become a well rounded reclamation scholar and practitioner. Therefore, reclamation specialists are often interested in historical perspectives concerning the practices, concepts, and projects of individuals who practiced surface mine reclamation prior to the Surface Mine Reclamation Act of 1977. One such individual was the late Kenneth L. Schellie, a landscape architect and planner who practiced in the American Midwest, starting in the post World War II era and continued until the 1970s (Figure 1). This paper describes and recognizes his contributions in reclamation planning and design.



Figure 1. An image of Ken Schellie during the height of his professional practice, (Schellie and Rogier 1963, used by permission National Aggregate Association).

---

<sup>1</sup>Paper presented as a poster at the 17th Annual National Meeting of the American Society for Surface Mining and Reclamation, Tampa, Florida, June 11-15, 2000.

<sup>2</sup>Jon Bryan Burley, Assistant Professor, Landscape Architecture Program, Geography Department, College of Social Science, Michigan State University, E. Lansing, MI 48824

<sup>3</sup>Anthony M. Bauer, FASLA, Bauer Ford Reclamation Design, Lansing, MI

Ken Schellie began his career in a post World War II era where land-use planning and developing the general land-use physical community plan was being

widely adopted across communities, townships, and counties within the United States and Canada (Kent 1964). While the primary tools of land-use planning had been established before this time and some land-use planning had been practiced, much of the work community by community was earnestly begun in the late 1940s. Landscape Architects and planners were busy developing these land-use plans and zoning ordinances during the 1950s. Ken Schellie was a member of the American Society of Landscape Architects, the American Institute of Planners, the American Society of Planning officials, and the Urban Land Institute (Schellie and Rogier 1963), having graduated with a Bachelor of Science in Landscape Architecture and City Planning from the University of Illinois. Consequently, at the time, he was very well qualified to pursue a career professionally assisting communities to develop land-use plans and zoning ordinances.

In about 1948, Ken established his professional consulting firm, Schellie and Associates, consisting of planning consultants and landscape architects, based in Indianapolis, Indiana. Initially, Mr. Schellie practiced consulting in the Indiana area; however, as his association with sand and gravel reclamation increased, his practiced expanded.

During the post World War II boom, the need for sand and gravel products greatly expanded. These products were being used in an ever expanding transportation system, including the interstate highway system and for building construction. Design experiments a few decades earlier by engineers and architects such as at the Fallingwater Kaufmann House, by Frank Lloyd Wright had illustrated the potential of materials composed of steel, aggregate, and a binder (Kaufmann, 1986). As these materials were being supplied, hauling costs influenced the selection of sites to be mined, by selecting sites closest to the delivery of products. Thus the sand and gravel operations were often quite close to human settlements. By the 1960s, the environmental movement began, often engaging surface mine operations in conflict over environmental issues. In the state of Indiana, Ken Schellie was positioned to help communities with their environmental land-use issues and to assist sand and gravel operators.

It is believed that Ken became engaged in reclamation activities because of Indiana communities having sand and gravel operations within their communities, Ken's land-use planning expertise, and his professional collaboration with the Soil Conservation Service which was concerned with surface mined lands.

## Discussion

Ken Schellie's contribution to reclamation can be primarily categorized into three major areas. He was able to develop a list of planning, design, and management principles useful in the operations and reclamation of sand and gravel mines. He was also an educator/author, who was a major figure in the training of landscape architects to meet the needs of the mining industry and a significant author of documents concerning the development and reclamation of surface mine lands. Finally, he contributed to the industry's understanding of land-use controls, surface mine ecology, and vegetation suitable for reclamation.

### Planning, Design, and Management Principles

The development of design principles is an activity that is often pursued by seasoned practitioners, summarizing their normative beliefs concerning their area of specialization. For example, Frank Lloyd Wright published books describing his design philosophies (normative beliefs), such as "An Organic Architecture: the Architecture of Democracy," (Wright 1939). Al Rutledge (1971), an expert on park planning, design, and management published a description of eight principles for recreation settings:

- Principle 1: Everything must have a purpose
- Principle 2: Design must be for people
- Principle 3. Both function and aesthetics must be satisfied
- Principle 4: Establish a substantial experience
- Principle 5: Establish an appropriate experience
- Principle 6: Satisfy technical requirements
- Principle 7: Meet needs for lowest possible cost
- Principle 8: Provide for supervision ease

Sometimes these design philosophies are called design theories; however these are not like scientific theories. Scientific theories are explanations of phenomena and are discarded as they are refuted. A scientific theory that does not "stand-up" to observed phenomena is no longer an accepted theory. In contrast, design theories are often easily refuted and the designers themselves may not always be true to their design philosophies. Nevertheless, these design philosophies may serve as general guidelines describing the built phenomena of planners, designers, and land managers comprising a set of beliefs generally adhered, followed, and implemented. Therefore, design scholars such as Lang (1987) describe these design theories as normative theories or normative beliefs and are not to be confused



Figure 2. Ken Schellie was concerned about post-mining landscapes like the one illustrated in this figure. While this environment may be somewhat ideal for pan-fish or some waterfowl, if the post-mining environment was supposed to support housing, this post-mining landscape would require substantial additional costs to develop it for housing, when the act of surface mining could have created the desired landscape configuration at little additional cost (Johnson 1966, used by permission National Aggregate Association).

with scientific theories. The followers of Frank Lloyd Wright in the 2000s still adhere to some of his normative design theories.

It is a traditional professional activity for architects, planners, landscape architects, and interior designers to construct these design beliefs through professional experiences. These practitioners are trained to analyze and synthesize their thoughts into somewhat succinct ideas. Ken Schellie was therefore trained to be able to generate a series of statements reflecting his ideas about the projects he encountered. His ideas are not necessarily unique and are partially based upon the knowledge imbedded within the professor of landscape architecture. Nevertheless, he was the first person to widely publish and promote these ideas to the industry, students, communities, and other professionals.

Principle 1: Surface Mining as a Transitional Land-use.

As a planner and designer of the environment, it is quite reasonable to believe that Ken viewed the environment as containing a wide range of possibilities and potential. Therefore land could be envisioned as holding different potential across time. At one time in the Midwest, a sandy gravelly site may have contained a savanna of oaks and hickories. Then the land may have changed to a grassland/pasture. As urban development approached the site, the land may be mined for its sand and gravel deposits, and then the land may be used for housing, institutional development, recreation, wildlife, and commercial business. This longer term view may not be held by novices, especially when the changes in the landscape may take generations to occur. In contrast

trained professionals with a sense of design history and precedent may have a stronger appreciation for longer term changes. This appreciation was evident in a book devoted to examining transitional land-uses for surface mining operations (Schellie 1977). This book, even today, regardless of the extraction material or landscape setting, should be examined by reclamation specialists to gain a perspective concerning the greater landscape and land development outlook.

Principle 2: Simultaneous Excavation and Rehabilitation.

Ken Schellie strongly promoted this concept, especially after Bauer (1965) and Johnson (1966) illustrated and published their reports on this topic. Essentially, the act of surface mining, conducted in a sequential order can facilitate landscape reclamation through the thoughtful placement of dikes and waste sand. Otherwise, the post-mining landscape may require extensive land reshaping to accommodate the proposed post-mining land-use (Figure 2). Simultaneous excavation and rehabilitation takes advantage of earth moving operations to place soil materials where desired in one smooth cost saving process.

Principle 3: Mining Operations to Create Land for Post-mining Land-uses.

The act of earth moving provided opportunities to create desirable attributes on the landscape such as the creation of ponds, islands, building sites, site grading and related activities. Instead of considering the surface mine operations as digging on the earth's surface to extract resources, the act of digging on the earth's surface afforded opportunities to create desirable landscapes. This



Figure 3. This image represents a post-mining environment that is usable for housing, is multi-functional, and has value added properties. Ken Schellie used this photograph in his book Sand and Gravel Operations: a Transitional Land Use (Schellie 1977, used by permission National Aggregate Association).

normative belief presents surface mining as a potentially positive activity within the community as opposed to considering the consequences of surface mining as negative.

Principle 4: The Post-mining Land can be more Valuable than the Pre-mining Landscape. Ken Schellie promoted the idea that the act of surface mining could generate a "value added" condition on the post-mining landscape. In other words, the land could be more valuable after mining than before mining (Figure 3). Again, this idea is a normative belief that views surface mining as a potentially positive influence in the creation of highly valued land.

Principle 5: Multiple Post-mining Land-uses. From a landscape architectural perspective, the belief that the landscape requires multiple functions across the spatial continuum is a common sense approach. From the beginning of his publications in 1963 (Schellie and Rogier), there is a recognition that the post-mining landscape held the potential to become many land-uses

in an integrated manner and designed the landscape accordingly. Ken Schellie was fortunate to consult for the sand and gravel industry, because this industry often had the flexibility to generate land-uses that accommodate and work within the context of a general land-use plan for a community. Unfortunately, today other extractive industries are greatly hampered by inflexible, uni-dimensional post-mining land-use requirements.

Principle 6: Surface Mine Planning Results in Fewer Delays, Efficient Mining, and Increased Profits. The ideas imbedded in this normative belief are implied through-out Ken's publications and it is probably the most important principle that will attract the attention of the industry.

#### Publications and Students

In cooperation with the National Sand and Gravel Association and the University of Illinois, Ken Schellie prepared and directed the publication of

documents concerning land reclamation and surface mining. The first document prepared by Ken was with the assistance of an employee, David A Rogier (Schellie and Rogier 1963). David received his Bachelors of Fine Art in Landscape Architecture at the University of Illinois in 1957. While Ken was primarily a planner, David complemented Ken's skills by being a designer and plantsmen. Thus in documents authored by the two, Ken's contributions are affiliated with land-use planning and David's contributions are affiliated with design, plant materials, construction, and environmental ecology.

At the University of Illinois, several documents were prepared, including reports by Bauer (1965), Johnson (1966), Jensen (1967), Baxter (1969), and Pickels (1969). While assisting with students at the University of Illinois, Ken worked with a research committee that was composed of professor William G. Carnes, Chairman, Department of Landscape Architecture at the University of Illinois, Louis B. Wetmore, Deputy Commissioner, Department of Development and Planning, Chicago, Illinois, C.G. Cooley, Cooley Gravel Company, W.I. Theime, President of the American Aggregates Corporation, and Vincent P. Ahearn, Jr., Secretary for the Committee on Public Relations, National Sand and Gravel Association (now the National Aggregate Association). In addition, Thomas C. Hazlett, then an associate professor at the University of Illinois and eventually the Coordinator of the Landscape Architecture Program at Michigan State University and professor emeritus, advised students under the program.

Of the University of Illinois students who participated in the program, A.M. Bauer continued a strong affiliation with the surface mining industry, became a fellow in the American Society of Landscape Architects, was the reclamation educator of the year in the mid-1990s, and is widely recognized as an international authority on the subject. C. Johnson pursued an academic career at Utah State, combining wildlife habitat issues with surface mining and reclamation. D. Jensen followed a professional practice track concerning the planning and design of communities, practicing in the Colorado region.

In other publication activities, Schellie and Bauer (1968) published a document addressing land-use planning affiliated with industrial sands. Finally, in 1977, as Ken retired from professional practice, he edited a book summarizing his knowledge base in the subject (Schellie 1977).

#### Technical Contributions

Ken's professional planning and design firm gained expertise in reclamation planning and design.

Starting in Indiana, his firm developed a reputation for site development and reclamation planning, design, and management services. He consulted with the Drava Corporation in Cincinnati, Ohio, did work on a project along the sand dunes of New Jersey, and consulted with the Ottawa Silica Company in Illinois, American Aggregates in Ohio, Industrial Sands Corporation in Muskegon, Michigan, and for Pittsburgh Glass in Virginia. With this base of expertise, Ken directed the publication of documents which selected vegetation suitable for reclamation applications, described the ecology of the sand and gravel surface mine, illustrated the environmental impact process related to surface mines, and identified basic land-use controls associated with surface mining (Schellie and Rogier 1963 and Schellie ed. 1977).

#### Concluding Remarks

It is unfortunate that Ken passed away before the formation of the American Society for Surface Mining and Reclamation. Ken was a leader in the area of reclamation planning, design, and management. Much of this work was accomplished before landscape reclamation was of great national concern.

#### Literature Cited

- Bauer, A.M. 1965. Simultaneous Excavation and Rehabilitation of Sand and Gravel Sites. National Sand and Gravel Association, Project Number 1.
- Baxter, J.G. 1969. Site Planning for Sand and Gravel Operations. National Sand and Gravel Association, Project Number 4.
- Jensen, D.R. 1967. Selecting Land Use for Sand and Gravel Sites. National Sand and Gravel Association, Project Number 3.
- Johnson, C. 1966. Practical Operating Procedures for Progressive Rehabilitation of Sand and Gravel Sites. National Sand and Gravel Association, Project Number 2.
- Kaufmann, E.A, Jr. 1986. Fallingwater: a Frank Lloyd Wright Country House. Cross River Press, Ltd.
- Kent, T.J., Jr. 1964. The Urban General Plan. Chandler Publishing Company, San Francisco.
- Lang, J.T. 1987. Creating Architectural Theory: the Role of the Behavioral Sciences in Environmental Design. Van Nostrand Reinhold Company.

- Pickels, G. 1969. Realizing the Recreation Potential of Sand and Gravel Sites. National Sand and Gravel Association.
- Rutledge, A.J. 1971. Anatomy of a Park: the Essentials of Recreation Area Planning and Design. McGraw-Hill Book Company.
- Schellie, K.L. (ed.). 1977. Sand & Gravel Operations: a Transitional Land Use. National Sand And Gravel Association, Silver Spring, Maryland.
- Schellie, K.L. and A.M. Bauer. 1968. Shaping the Land, Planned Use of Industrial Sand Deposits. National Sand and Gravel Association, Silver Spring, Maryland.
- Schellie, K.L. and D.A. Rogier. 1963. Utilization and Rehabilitation Practices for Sand and Gravel Operations. National Sand and Gravel Association, Silver Spring, Maryland.
- Wright, F.L. 1939. An Organic Architecture: the Architecture of Democracy. Lund Humphries & Company, London.