"Negative capability… {is being} capable of being in uncertainties, mysteries, doubts without any irritable reaching after fact and reason."
John Keats

"Every crisis is an opportunity."
Anonymous proverb

Murray City

Ball Diamond Project
Murray City, Ohio

Preliminary Concept Project Report

Arts and Appalachia Clean Streams Program
U.S. Department of the Interior, Office of Surface Mining
National Endowment for the Arts

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I. Overview

1. The Murray City Ball Diamond Project:

- A joint effort of citizens of Murray City, Ohio; Monday Creek Restoration Project; Ohio Department of Natural Resources; and the *Arts and Appalachia Clean Streams Program* of the U.S. Department of the Interior, Office of Surface Mining; and the National Endowment for the Arts.
- A multi-disciplinary design team charged to develop an innovative and artful approach.
- A 4.5 acre privately owned, publicly used park with a ball field in Murray City, Ward Township, Hocking County, Ohio.
- Polluted water from nearby abandoned coal mines that surfaces on the ball field from two "seeps"; 40-400 gpm of this acidified water, pH 2.6, runs to Snow Fork of Monday Creek bordering the site.

2. Community and Team Goals for the Project:

- Clean up the water on the site, both AMD and site sewerage.
- Preserve open space along with site development.
- Develop awareness and appreciation of the cultural heritage of the area.
- Facilitate environmental learning as a component of a sustainable future.
- Develop potential of the site for multi-generational recreation and cultural enjoyment.
- Enhance civic pride and sense of identity for residents of Murray City.
- Assist in economic development of the area through enhanced community assets.

3. Abstract Concepts for Site Development:

- Celebrate the transformative potential of the human imagination.
- Multifunctional elements save space and demonstrate interconnectivity of events; cultural awareness can coexist with recreation and environmental stewardship.

- Nature and Culture are inseparable; they co-mingle in Murray City in the oral vernacular.
- The dominant physical characteristic of the site is "water" of all kinds.
- Allow the formal design of SAPS ponds to follow other developments.

4. Major Proposals for the Site:
- Develop writing programs for children, exploring vernacular mining language and local tradition of having "nicknames"; children's text becomes public inscriptions for the site.
- Design SAP System for AMD clean up + recreational wading area + environmental education area.
- Design aluminum flushing pond as skate bowl + ice rink + environmental teaching site map.
- Utilize steel "slag" cement materials on site and in SAPS as embodiment of environmental ethos.
- Design and locate amphitheater as a cultural site for music, theatre, and fireworks + flood gauge.
- Design new shelter house after the existing depot for social groups, farmers' market, and education.

5. Other New Elements and Amenities to be Developed for the Site:
- Thematically designed reinforcement around seeps, inlets, and outlets for AMD water.
- Gauges, weirs, flumes, and water measures of all kinds to observe ecology of site.
- Walking paths with resting places and paths through the site connected to regional trails.
- Shallow wading area in clean pond, walkovers, and platforms for viewing and pleasure.
- Sand septic and ADA public restrooms; reroute small stream as necessary.
- Privacy screen for residence and other strategic plantings.

6. Existing Site Elements to be Incorporated and Developed:
- Incorporate historic 1897 depot, depot platform of ornamental brick, and circular structure.
- Develop site as a companion to existing park along old rail axis, utilizing implied linear forms.
- Preserve mature trees and vegetation around perimeter, parking area, and existing road access.

7. Potential Phasing of Site Development:
- Phase 1 Workshops in schools along with design development and programming ideas.
- Phase 2 Water works - SAPS engineered and built, septic and restroom relocation.
- Phase 3 Cement works - locate text, flushing pond, amphitheater development, and benches.
- Phase 4 Depot development, platform, shelter house, and axis to other city park site.

II. Report Narrative

1. The Murray City Ball Diamond Project:

1.1 This project is a joint effort of the citizens of Murray City, Ohio; Monday Creek Restoration Project (MCRP), a branch of Rural Action, Inc.; Ohio Department of Natural Resources (ODNR), Division of Mineral Management. Project conceptualization is funded through the *Arts and Appalachia Clean Stream Program*, a Federal Interagency Cooperative venture of the U.S. Department of the Interior's Office of Surface Mining and the National Endowment for the Arts. The project proposes a model to transform environmental liabilities into community assets. (See Addendum #1.)

1.2 To this end, this project brings together a multi-disciplinary design team charged to develop an innovative and artful approach to an Acid Mine Drainage (AMD) pollution remediation site that would otherwise be developed from a purely functional perspective. AMD is a widespread pollutant in all of Appalachia. Over 1300 stream miles are impacted by AMD pollution in Ohio alone. It is expected that the site will be conceptualized to include a Sequential Alkaline Producing System (SAPS), a form of anoxic limestone drain, or a similar system. This series of artificial wetlands is to be combined with other amenities into a comprehensive site design plan that develops its cultural potential, as well as addresses the need for remediation. The multiple aims of the project have attracted the interest of municipal, local, and regional planning groups, whose ingenuity and cooperation will be required. (See Addendum # 2.)

1.3 Known as the Murray City Ball Diamond, the 4.5 acre site is relatively flat and comprised of a rather permeable "chagrin" soil (see addendum #12). It is owned by the Sunday Creek Coal Company but it has been used by the Village of Murray City, Ward Township, Hocking County for 30 years as a public park and ball field. The Monday Creek Watershed area population is stable at approximately 7, 085 people, with 16% of the population being over the age of 65. In 1990 Murray City had a population of 501. The site is used annually for a highly attended Fourth of July celebration called the "Hall of Fame Festival"; it is organized by the volunteer firemen and used to fund this vital community service. (See Addendum #3.)

1.4 The site is adjacent to an area that was coal mined for about ten years and produces AMD. Rainwater and ground water run over exposed coal, become acidified, and make their way to the surface in two locations known as AMD seeps. These two seeps, shown as numbers 305 and 306, average approximately 40 and 61 gallons per minute, respectively, with peak flow topping 400 gpm during spring. The acidified water has a pH ranging from 2.5 to 3.3 and contains dissolved metals at the rate of 110ppm iron and 47 ppm aluminum (see Flow Charts, Addendum #9). The seeps run off into the Snow Fork of Monday Creek where the water "armors" the stream bed with a metallic precipitant. These pollutants have a profound influence on aquatic organisms and human use of water supplies, often

rendering streams almost lifeless. Snow Fork is such a "dead stream." Snow Fork floods the site regularly about every ten years. Snow Fork also contains untreated sewerage, including some running across the site itself from homes on the west side of the site.

2. Community and Team Goals for the Project:

The Arts and Appalachia Clean Streams Program aims to "transform environmental liabilities into community assets." In community meetings held throughout spring and summer 2000, the citizens of Murray City voiced their concerns for the development of the site. As compiled by MCRP, they center on the following needs and desires. (See Addenda #4, 5, 6.)

2.1 Clean up the water on the site, both AMD and site sewage.
The concern here is to achieve an environmental clean-up but also possibly to have some clean water accessible for recreation: a place to get wet in summer, to be near water for contemplation. The large scale of the SAPS wetland cells--no matter what design is used--will put much of the site underwater. Recreational access to clean water would help justify the loss of open space. It is understood that the acidity of AMD actually helps control the sewerage situation in the small creek on site and in Snow Fork. So, AMD cleanup will hasten the need to address Murray City's general sewerage problem.

2.2 Preserve open space along with site development.
This site is one of the few open spaces in the area. This is due to the topography of the area and the fact that a large percentage of the land is owned by either the coal companies or various governmental agencies. This open land is appreciated as such and will be missed if overbuilt. While the actual ball field is currently underused, some residents feel that an interest in ball playing could return. A recent attempt to annex more space for the municipality failed. However, by establishing a dynamic relationship between this park and another park at the other end of town—conceptualizing these two sites as complementary--could aid in addressing the need for more useable publicly land.

2.3 Develop awareness and appreciation of the cultural heritage of the area.
Heritage is generally understood to include the coal mining history of the area. This desire for historical awareness has, heretofore, focused on the depot. Other prized elements are the exquisite salt glazed ceramic bricks manufactured in the area which were used for the depot platform. While a suggestion has arisen that a historical marker in the form a figurative memorial be erected, this has not been mentioned by community members; however, this design solution would not lend itself to being multi-functional. (See Addendum #17.)

Great potential also resides in the highly unique oral tradition of the area, showing itself as both the use of beautiful vernacular language (slang) related to mining and the widespread practice of residents having nicknames. (See Addendum #15.)
Pride of place is also focused on a famous athletic team in the past, whose presence can be traced to the Fourth of July "Hall of Fame Festival." Then as now, there is great need and desire for recreation.

2.4 Facilitate environmental learning as a component of a sustainable future.
There is a great awareness of the need to clean up this AMD site and simultaneously engage multi-generational learning about our interrelationship with nature. Interest was expressed on many fronts to have aspects of the site function as examples for teachers who need clear demonstration of principles for students. Also of interest were opportunities for active participation: activities in which students can engage in routine maintenance tasks, such as water quality monitoring. Rural Action is quite involved with environmental learning through the *Environment as Integrating Curriculum*; to date this program does not reach the Nelsonville-York Schools which are attended by Murray City children. This program uses 24 themes about watershed, wetlands ecology, habitats, and everyday ecology. In order to accommodate this type of program at the site, there needs to be space to park one school bus; seating or shelter areas would also be helpful in handling school groups on site. In addition to the chemistry of water clean up, citizens were keen to cultivate native plants and even endangered rare species still found in the area and in which they take great pride. (See Addendum #11.)

2.5 Develop potential of the site for multi-generational recreation and cultural enjoyment.
Recreation is at the top of most residents' list. Seniors need places for passive recreation, sitting, walking, and socializing; local children need active and thought-provoking things to do. Boredom and inactivity were cited as contributing factors to local vandalism and other social issues for young people in the area. Some ability to skate, skate board, or ride bikes was often mentioned. There is also desire to connect to bike paths and horse trails in the surrounding area that link Murray City with other areas and their established patterns of outdoor activity.

2.6 Enhance civic pride and sense of identity for residents of Murray City.
Without prescribing what it should be or what it might contain, the residents seemed very invested in having this site developed into something "special" that would really "put us on the map." This desire for a "civic center," literally and figuratively, was very strong and is manifested in the Fourth of July Festival

which is so important to residents. It is understood that developments that could assist with this "civic center" are tied to economic development.

2.7 Assist in economic development of the area through enhanced community assets.
The ability to retain the population of Murray City is directly tied to the town's economic development. A cultural asset that enhances identity and also draws tourism serves all the purposes. A multifaceted site plan creates the maximum opportunities for types of tourism and provides incentives for amenities. Connections to regional planning and cultural programming on and off site will further develop opportunities.

3. Abstract Concepts for Site Development:

3.1 Celebrate the transformative potential of the human imagination.
J.B. Jackson, champion of the American vernacular landscape, writes of the "Necessity of Ruins" or the human need to redeem something that has fallen into disrepair. Others reflect that "every crisis is an opportunity." This potential--to find opportunity in disrepair--is central to the human capacity to remake and renew one's potential. In this case, we aim to address this capacity metaphorically by celebrating the "process" of using constructed wetlands for AMD clean up and encouraging a *parallel* process of Murray City residents who are redirecting their future by re-imagining it.

3.2 Multifunctional elements save space and demonstrate interconnectivity of events.
Many features proposed to be built have more than one function. This is spatially and fiscally economical and matches the beautiful frugality of the depot design. Going beyond this, we propose to make these new elements on the Murray City site "radically" multifunctional. Every element should serve an unexpected "coupling" of functions to demonstrate that apparent function is often a product of habit and can be rethought to solve new problems. This turns the idea that "form follows function" on its ear. Here:

form follows recreation…..function is learning….. form follows fun.

3.3 Nature and Culture are inseparable.
Culture, sub-cultures, and societies develop in response to dense networks of forces that include the hydraulic, the linguistic, the geologic. All of these are embedded in the sociologic. In the oral traditions of Murray City, just as in the "artificial" ponds built everywhere in the area, these elements co-mingle overtly and are a unique cultural asset. We hope to bring into visibility this co-mingling as we dispel notions that art and science cannot mix.

3.4 The dominant physical characteristic of the site is "water" of all kinds.
This site has many kinds of water movement and, consequently, contains a unique array of opportunities for environmental learning and watershed ecology. The seeps carry ground water out of the mines; the flow increases with rain fall. This water gradually makes is way through the site toward the Snow Fork, one of two main tributaries of Monday Creek, which floods predictably every ten years or so. With the addition of treatment ponds, the slow drainage toward the creek will be slowed further, making it possible to study the water while it is in "residence" and to fully observe the volumetric change due to rainfall.

3.5 Allow the formal design of SAPS ponds to follow other developments.
The multiple needs of the community require that the site be designed to address function first. Many formal configurations are possible depending on the ultimate prioritization of amenities by the community. The processes proposed will dictate formal articulation.

Two principle ideas are developed in the following narrative and in the visual presentation:
- evolving traditional pond shapes to support the children's poetic text on the site; and
- evolving alternative pond shapes based on recreation and multi-purpose structures.

Rather than imposing a formalist solution on the site and designing the SAPS according to a form, such as the rail line rectangles, alternative thinking for generating shapes have been explored.

4. Major Proposals for the Site:

4.1 Vernacular language.
Develop writing programs for children exploring vernacular mining language and local tradition of having "nicknames." Children's' text becomes public inscriptions for the site.

4.1.1 Local poetry
In the coal mining vernacular familiar to all natives and in the charming and unique custom of holding nicknames for all residents, we see evidence of a cultural asset that is in keeping the famed oral tradition

of Appalachia yet is unique to this area. One resident pointed out that "If you didn't have a nickname, you didn't belong." (See Addendum # 15.)

Local mining idioms include such terms as:

Yellow boy
Red dog
Snow (aluminum)
Black boney
Black diamonds
Little Cities of Black Diamonds
Gob
Boney pile
Red streaks
Sulfer

4.1.2 The writing workshops
Here we propose that writers work with Murray City school children in writing workshops that use local *historical and environmental* themes to explore and *(pro)*claim their rich linguistic heritage and also explore *metaphorically* the science on the site. Using the 24 ecological themes of the *Environment as Integrating Curriculum* program, these workshops would be coordinated with this type of ecology programming for Murray City children and Nelsonville-York Schools. These workshops would be held in conjunction with sessions involving local teachers of art, language arts, and science.

The Ohio Arts Council has several programs for placing artists and writers in public schools to undertake such writing workshops. These include the *Arts in Education Artist-in-Residence* program and the *Appalachian Arts Program* for which support materials are included (see Addendum #14). This is a proven method for developing children's language skills and artistic appreciation. An inspirational account of one such workshop is described by Kathleen Norris in her essay entitled *"Exile, Homeland, and Negative Capability*" (*The Cloister Walk*, New York: Riverhead Books, 1996; see addenda #13).

4.1.3 Public inscription on the site
Writing from these workshops could be chosen and used as public inscription on the site. The selection could be made by an appointed community group (perhaps teachers, parents, students, and team members). The practice of putting words, phrases, and quotes in public places is an ongoing tradition. Public inscription in stone, used to define and inflect public space, is ancient and yet still very much alive. Contemporary civic projects, memorials, public art, and private gardens all utilize this well-known form. Inscribed in a durable material, thought-provoking text serves as a long-lasting cultural link and a reminder of the connectivity of generations.

Here we not only celebrate the artistic heritage of Murray City, but also engage a *new generation* in the continuity of this heritage and set the stage for meaningful site learning. It will be by Murray City, about Murray City and, thus, truly serve as a village center to all comers.

4.1.4 Inscriptions in steel "slag" cement materials—*concrete as concrete poetry*
Many locations for this text have been identified on the site drawings in the presentation. Rather than writing in expensive stone, we propose that the text be cast in cement made from steel slag, a recycled alkaline material, readily available in the area. Concrete can be beautiful, inexpensive, and environmentally friendly. The text can be cast directly into the concrete and placed on benches, walkways, pond edging, and along the axis to other park, as well as in and around new site elements described below.

Additionally, much of the work can be done by high school students and young adults from simple processes. The use of this material is ecologically and financially favorable, and its use can be a major theme and ethos for site development. It can be used for most of the developments on the site: the amphitheatre, skate bowl, restrooms, council ring top, paths, benches, etc. This steel slag is the same material specified in the alternative SAP System (see 4.2.3 below), unifying the site both poetically and chemically. This would literally produce "concrete poetry."

4.2. The SAP System.

4.2.1 Acid Mine Drainage formation (Notes from Farley and Deason, 2000-01)
Acid Mine Drainage **(**AMD) forms when sulfide minerals, such as iron pyrite, in rocks are exposed to air; leading to an oxidizing condition. Metals such as iron, sulfates, and dilute sulfuric acid are produced and subsequently enter streams and lakes in the vicinity of abandoned coal mines where pyrite is present.

Coal and peat are decomposed plant material. They also contain iron and magnesium, creating the familiar phenomenon of "bog iron," an ancient source of iron. It is formed when iron accumulates in the oxygen poor bog environment where it forms FeS_2, iron sulfite, instead of rust. When water hits the pyrite in an oxygenated situation as it comes to the surface, weak sulfuric acid ($H_2O + O_2 + FeS_2 + H_2SO_4$) is formed with iron in solution. This water has about the acidity of vinegar, usually about pH 3.

These pollutants have a profound influence on aquatic organisms and human use of water supplies, often rendering streams almost lifeless; Snow Fork is such a "dead stream." Murray City's seeps run at about pH 2.4. AMD treatment reverses this process, neutralizes acid, and re-deposits metals. In this process, at

pH 4.5, adequate alkalinity develops for iron to drop out. At pH5 - pH7 iron and aluminum drop out. These metals are recoverable though it is not economical to do so.

4.2.2 Remediation chemistry (Notes from Farley, 2001)
A Successive Alkaline Producing System (SAPS) is a manmade vertical flow wetland consisting of several water bodies or ponds that function as an integrated water treatment system for acid mine drainage. Organic compost and limestone are used to provide a kinetic and biologic treatment system for removing aluminum, iron, and acid from AMD polluted discharges. SAPS are considered passive water treatment systems in that they do not require daily monitoring or operation. The lifespan of the system is often 15 years or longer, requiring only monthly or quarterly maintenance to flush accumulated metals from the system into holding ponds and periodic (after several years) replenishment of the limestone and compost materials.

The beauty of a SAP System is that once set up, it will work passively and effectively for many years. In this case, we hope to maximize the didactic potential of the system and also exploit the clean water at the end of the system for other purposes. Residents have spoken of a need to have a place to wade in and get wet in warm weather. Also cited is the need for a shallow area where students can walk into the final polishing wetland to study the return of aquatic life that will happen there.

The SAP system serves these purposes:

AMD remediation	wetlands ecology education
recreational wading	water chemistry education

4.2.3 Two types of SAP Systems possible for the Murray City site
The two functional types of systems are:

- a conventional limestone anoxic drain and
- an alternative steel "slag" system.

- **Conventional limestone anoxic drain construction:**

A conventional SAPS system is the most tested and familiar type of system (see Addendum # 7). This type of system is comprised of the following ponds or cell types:

Cell #1 - Debris pond. Situated near the seeps, this pond would filter out sticks and mud that would clog the SAPS system. It can be lined with slag cement or limestone for iron color or pure slag for darker color and greater alkalinity. Then the water flows into cell #2.

Cell #2 - Alkalinizing pond. This is the actual SAPS where the water is alkalinized. The bottom of a pond is lined with 4 feet of coarse limestone, its the jagged edges fulfilling the need for surface area. The stone is covered with about 6" of mushroom compost to eliminate and absorb oxygen, providing the required anoxic atmosphere. Below all of this is a PVC drainage system emptying into a manifold used for occasional flushing. The SAPS is "flushed" periodically. The frequency depends on the aluminum content of the water flow. This desirable but infrequent flushing schedule is one element that allows the rethinking of this cell as a multi-functional opportunity. Cattails are frequently used around the edges of the SAPS for appearance, as a safety barrier and as a natural means to replenish the compost.

Cell #2A - Aluminum flushing tank. The aluminum sludge that is flushed out is deposited in a separate cell where it is allowed to dry or is hauled away wet. The rest of the time this cell is an open hole, collecting only small amounts of rainwater and debris. The desire to fully utilize this unattractive necessity has led to the multipurpose design solution described below.

Cell #3 - Detention basin. The precipitated metal is now tied up as a colloidal solid and suspended in the water. The longer it can be held "in residence," the more of it will precipitate out. Linear pond shapes hold water in residency longer for the same volume.

Cell #4 - Wetlands habitat/auxiliary detention basin. This pond is typically built but has a less clear mandatory system function. It may do any or all of the following:

- Beyond the "experiential" and the illusion of the "natural," it also functions as a second detention basin for times when flow is up due to rainfall.
- It may also be able to help with flood control and or have a partial bio-remediation function, either for the AMD problem or to help address the sewage issue up hill, or for the rest rooms that will be needed on the site for any public function. (See other solutions to this same problem in 5.5, sand septic ideas for site.)
- There are naturally occurring microbes, *dibenzosulpheriphages* that help with AMD but produce the naturally occurring "swamp gas" that is actually hydrogen sulfide. This natural process slows or ends during cold months and the system would have to be much bigger if we relied on these phages to accomplish the process.

- These wetlands could be "sold" to the State of Ohio to help fund a "trust" for operations and management.
- The clean end of this pond provides opportunities for water activities such as wading, nature observation, and environmental education. These activities are among those cited by residents as highly desirable.
- It can function to demonstrate that the water has been cleaned up by providing a clean aquatic habitat on the site.

- **Alternative steel "slag" based system:**

Steel slag, the same material proposed for use in the cement material for the text on site, is very high in alkalinity. In fact, it has more available alkalinity than limestone. Greater available alkalinity means shorter water "residency" and, consequently, smaller ponds overall, resulting in more available open space on site. Experimentation with SAPS systems built to use slag instead of limestone indicate that the systems are so much more efficient; they can be one tenth to one quarter the size of the conventional limestone systems. The specifications for a steel slag system have been drawn up by team member Mitchell E. Farley from ODNR (see Addendum #8). This system not only has a smaller overall footprint for the site, but utilizes the same recycled material proposed for the slag cement elements on the site (see# 4.3.1). The shape of the recharge trough presents some design challenges but suits perfectly the recreational concept for pond shapes described below in section # 4.2.4.

- **Comparison of surface area needed at Murray City for two type of SAP systems:**

(See diagram in PDF and description in additional information PDF and Addendum #7.)

A conventional system for this site as sized by Hydrologist, Bob Deason:

Debris pond	40' x 340' x 3'deep	**Flushing pond**	110' x 110' x 4' deep
SAPS pond	100' x 300' x 6'deep	**Polishing wetlands**	100' x 340' x 3' deep
Detention pond	130' x 180' x 4'deep		

An alternative steel "slag" system as sized by Mitchell E. Farley, ODNR (see Addendum # 8):

No Debris pond		**Recharge trough**	10' x 250' x 2' deep
SAPS pond	50' x 250' x 5'deep	**Flushing wetlands**	50' x 250' x 3' deep
Detention pond	10' x 250' x 3' deep		

4.2.4 Design ideas for SAPS pond shapes

- **Traditional shapes:**

The rectangle of the rail depot platform offers a historically grounded model that could be developed into rectangular shapes like those that have been used in formal parks for centuries. Additionally, these ponds are clearly designed and constructed, and more clearly demonstrate that this park is an active intervention built to responsibly engage a sustainable cultural ethos. Long thin rectangles provide longer water residency. However, these forms may be too austere and urban for this rural community.

Naturalistic ponds, by contrast, do not reveal that something special is going on here. Constructed "naturalism" renders the process invisible and could be seen to undermine the goal for the site to have a clear and obvious teaching function. That being said, the familiarity of this type of shape presents great potential for a beautiful and comfortable site, especially in combination with a well placed series of poetic inscriptions.

Some combination of geometric ponds gradually turning into more naturalistic is a way to demonstrate the transformation of the water back to its clean "natural" state. The viability of this idea would have to be tested during design development.

- **"Multi-functional" aluminum flushing pond:**

As alluded to above, the aluminum flushing pond appears to hold the greatest potential to become a multifunctional element as its use is intermittent. The proposal here is to make this cell serve as both a flushing pond and as a skate bowl for skate boarding. This saves space and passively teaches that recreation and responsible maintenance can co-exist.

This discrete cell adds longevity to the SAPS system by allowing routine removal of the precipitated aluminum. However, in typical applications this cell sits empty when not in use and is an eyesore. The form easily lends itself to this dual purpose and can be organic or geometric in character, as long as it has the sloping curves desirable for skateboarding.

Additionally, this cell can be built from the same slag concrete being utilized elsewhere on the site and can also be embellished with cast text. It can be flooded in the winter to be used as an ice skating rink.

Proper drainage and other functional issues do not appear to be impediments. (See images in presentation.)

- **Recreationally based "skate bowl" pond shapes:**

A quick look at some of the elaborate skate bowls being built around the country reveal that several skate parks resemble a series of cells very like the sequence of ponds used in a SAPS design. For example, the Modesto California Skate Park closely relates not only to a SAPS sequence but also to the alternative slag SAPS designed by Farley for the Murray City site. (See visual comparison images here.)

This observation suggests that rather than working with traditional shapes for ponds, seeking a formal solution in landscape design history, another idea is to work off of the recreational needs of the youth in the community. Here all the ponds shapes are based on the forms of the skate park. The multifunctional aluminum flushing pond/skate bowl is then, automatically, encapsulates the whole SAP System and becomes a small scale topographic map of the overall site, adding the capacity for environmental learning to its list of functions. Here, rather than *form follows function*, the concept is:

form follows recreation, *function is learning*, thus, *form follows fun.*

4.2.5 "Radically multi-functional" design

In addition to the remediation functions mentioned in 4.2.2, this design concept integrates these unlikely functions:

Aluminum flushing pond	Ice skating rink
Skate board bowl	Site topographic map for learning

- **"Transgressive Equivalents" change habits of mind:**

The integration of unlikely functions also links some new pairs of equivalences and embodies the change of mindset that allows the re-envisioning of the future.

Now we see:

Science = Recreation	SAPS Ponds = Fun
Skating = Topography	Environmentalism = Youth-centered

4.3 Utilize steel "slag" cement materials on site and in SAPS as embodiment of environmental/cultural ethos.

4.3.1 A material description of steel slag

A by-product of the manufacture of iron and steel, slag material is plentiful and its use on the site is an opportunity to reclaim the embodied energy from this manufacturing process. Both metaphorically and chemically, the use of this material for the cast cement elements and for the re-alkalization of the water makes manifest a link in the cycle of mining coal for energy: using that energy for iron smelting, and re-using the by-product of that process to address the environmental problems caused by the original mining. Thus, its use is an embodiment of a sustainable ethos for the area. (See Addendum # 18.)

Recycled steel slag is available from a vendor in Martins Ferry, Ohio. It is recycled in the sense that all possible metals have been removed from the slag before secondary use. This is important as some slag contains so many heavy metals that they are classified a hazardous waste. The slag is essentially a glass (calcium silicate). It can be ground or crushed to about any size--from dust to several inches in diameter. Its use requires an EPA PTI (permit to install) because the material is classified as a solid waste. (Farley, Notes 12-3-2000)

4.3.2 Steel slag as the basis of SAP System

As we have seen, greater available alkalinity means shorter water "residency" and, consequently, smaller ponds overall resulting in more available open space on site. (See Addendum #8.)

4.3.3 Steel "slag" as a component of cement formulation

The use of slag as a component of paving materials is well known. This typical use can be extended into sustainability based on visual aesthetic for the site, unifying the skate bowl, text, amphitheatre, etc. (See Addendum #18 for specifications.)

4.4 Design and locate amphitheater as a cultural site and flood gauge, a multifunctional concept.

4.4.1 Cultural uses for an outdoor stage facility

Community desire for some sort of band shell or amphitheatre came up repeatedly in discussion. Such an amenity can provide the kind of special identity that Murray City citizens want by creating a space for a variety of outdoor programming such a music, drama, school group activities, and extra seating during the

fireworks at the Fourth of July Festival. This cultural draw puts Murray City on the map and allows for future economic development.

4.4.2 Locating the amphitheatre
Locating such an amenity can be difficult on a crowded site that partially floods routinely and floods completely about every ten years. Siting it near the water and using traditional stair step amphitheater design, allows the theatre to drain naturally without tiling after flooding. Once the water is cleaned up, it can become a pleasant opportunity to sit near the creek in nice weather. The main highway runs parallel to the creek and, thus, the stage could be viewed from the road, enticing passers-by to stop and investigate the programming.

4.4.3. Flood Gauge and other Environmental Uses
Sited as described above, the amphitheatre will automatically show the cyclic vicissitudes of the water level of the creek. It will have the dual function of a flood gauge visible from the road or the site. This aspect can be enhanced by casting large elevation numbers into the terraces using the same slag concrete material mentioned before and by making a stair stepped stage that amplifies this function. (See animation in presentation.)

4.4.4 Programming
Representatives from the Ohio Arts Council attended a meeting of Regional Partners of MCRP in July 2000 and indicated that grant funds for programming such an amenity already exist. They appeared in favor of having such a location in this region and offered assistance in future programming. (See Addendum #11.)

4.5 Design new shelter house after the existing depot.

4.5.1 Multi-functionality
Murray City residents need additional picnic pavilion space; the one extant shelter in the park at the other end of town is inadequate for current demand. With a new shelter house, school groups would be able to meet on site out of the rain. This multi-functional pavilion would be placed directly north of the depot, parallel to and east of the excavated brick platform. It would be served by a small access road extending from the parking area. Small trucks could be pulled up for farmers' markets and other functions.

4.5.2 Architectural concept
This design would be based on the architectural motifs of the existing historic depot and the rectilinear form of the brick platform. The architectural concept is based on the Benjamin Franklin memorial designed by Robert Venturi in Franklin Court, Philadelphia. This structure, known as a "ghost structure," resembles a schematic line drawing in air of the house that no longer exists, making manifest the historical memory of the site. In an inversion of this principle, this architectural *amplification* makes *more visible* the subtle beauty of the existing depot, drawing out and proclaiming it as a community asset.

5. Other New Elements and Amenities to be Developed for the Site:

5.1 Thematically design reinforcement around seeps, inlets, and outlets for AMD water.
Limestone or slag concrete is both alkaline enough to collect iron when brought into contact with AMD. Depending on the material design concept selected for the site, either of these can be used around the seeps to draw attention to the source of the water and also shore up the area to prevent excessive mud and debris from entering the system. The seep reinforcement might be built to resemble the original openings to these "punch" mines. Text can also be used. Some sort of embellishment around the inlets and outlets of the water will announce the process and make evident the transformation, especially if iron staining is evident on the inlets and not on the outlets.

5.2 Gauges, weirs, flumes, and water measures of all kinds.
Efficient function of the SAPS will require consistent monitoring of water quality and flow. It is anticipated that these routine measurements will be taken by local students as part of ongoing environmental education. This stewardship activity, valuable in itself, will be facilitated and made visible by publicly accessible measuring devices all around the site. These will make apparent the various hydraulic systems and cycles on the site. These systems include the flow from the seeps, probably measured by devices such as weirs, "partial flumes," rain gauges in numerous locations around the ponds, and the previously mentioned amphitheatre/flood gauge. These elements should be designed so they have some shared material characteristics that visually connect them on the site, such as cast poetic text, historical form, etc. (see Addendum #9).

5.3 Walking paths with resting places and paths through site connected to regional trails.
Passive recreational activities enjoyable by all generations such as walking paths, locations for quite observation, and places to sit and rest should be developed throughout. These are also opportunities for additional placement of text.

5.4 Shallow wading area, walkovers, and platforms for viewing and pleasure.
One of the great ironies of the Murray City site is that there is water everywhere and none of it is fit to touch. Local citizens have pointed out that the ability to simply "get wet" is high up on their list of simple recreational desires. As the water gets cleaned up and, thus, becomes more approachable, simple devices for being in and near this clean water should be built.

5.5 Sand septic and ADA public restrooms; reroute small stream as necessary.

5.5.1 New sand Septic
A new sand septic drainage field should be built directly west of the depot and the public toilets be relocated near the field. These new facilities should be ADA accessible as well.

5.5.2 Separate water from small stream
Rain water, gray water, and some sewerage enter the site from the residences directly to the west of the site at the south end. The resulting small stream running across the site is highly polluted with AMD and sewerage. Re-route and divide this water as necessary to send the sewerage into the new sand septic field and the clean and gray water directly into the creek.

5.5.3 Unify the site
The stream in its present location bifurcates the site. Even the smallest SAPS will inundate the north end of the site, making the remaining area unusable. Relocating this stream achieves the sewerage treatment desirable and also allows the remaining open space to be uninterrupted and available. This relocation also allows the placement of the amphitheatre.

5.6 Privacy screen for residence and other strategic plantings.
The private residence at the southwest corner of the site may begin to desire more privacy as the site becomes more heavily used. A dense planting around this residence would assure quality of life for this long term residence. Plantings around out buildings and restrooms could serve similar purposes.

6. Existing Site Elements to be Incorporated and Developed:

6.1 Incorporate historic 1897 depot, depot platform of ornamental brick, and circular structure.
The small wood train depot and other features of the site have been assessed by the Ohio Historical Society Register Review and Compliance representative, Lisa Adkins. Additionally, the depot has begun to be restored by the Murray City Improvement Committee, a local group of concerned citizens. This modest but handsome structure is adjacent to a large rectangular railroad platform made of highly ornamental salt glazed brick manufactured in the area at Haddonville. The platform is basically intact and should be unearthed and stabilized. Bricks for the small repairs are not scarce, but are prized. Every attempt should be made to preserve this structure and use it as the site's dominant cultural element.

Less evident is a circular brick structure on the west side of the site. This structure, probably a silo foundation, should be unearthed, tuck-pointed, or otherwise stabilized. It could be developed into a council ring, a circular seating arrangement derived from Native American forms. It could be used as is or developed into a more elaborate element with the addition of wider slag cement tops with cast text from the writing workshops on vernacular language (see 4.1.2).

6.2 Develop site as a companion to existing park along old rail axis, utilizing implied linear forms.
The rail line that ran through the site originally, crossing nearby the brick depot platform, exists today as an undeveloped open allee, or axis, connecting the Ball Diamond site with the public park at the other end of town, creating a visual and physical linkage. They are also connected by the history this linear space implies. Thus, the two parks should be developed in a complementary fashion and connected with bike and pedestrian paths. This axis is also a great place for text or images developed by local children and provides opportunities for regional path connections. It is unclear at time of this report who owns this property (the village of Murray City, various private parties) or if it still exists as a rail right-of-way. This axis along with the rectilinear depot platform is the source for the rectilinear pond shapes (see 4.2.4).

6.3 Preserve mature trees and perimeter vegetation, parking area, and existing access road.
The site has many large mature trees, primarily sycamores, most of which are not in the way of proposed developments. Likewise the perimeter of the site has a lush growth of vegetation that can be utilized as a screen for surrounding houses, especially if the site becomes heavily used. This growth may have to be partially sacrificed should the elevation at the north end of the site be changed significantly to prevent flooding out the SAPS. Parking would remain in its current location but the lot would be expanded and refined around new elements. Existing roads would remain, save for small elevation changes and work performed to bring the AMD seep flow across road in a reliable manner.

7. Potential Phasing of Site Development:

The elements of this project have been conceived to be developed in phases as time, money, and energy allow. These phases are as follows:

7.1 Phase 1 Workshops in schools along with design development and programming ideas.
While the design elements are being discussed and debated in the community, and while funds are being sought for the final design project, funding should be secured to organize and begin the writing workshops for children in the area. The workshops will be of benefit irrespective of the permanent inclusion of writings on site. If text is used for the site, it will be ready to go for design development when this phase begins. Should the amphitheatre and shelter house concepts maintain community support, dialogue with the OAC should begin immediately so that programming issues for these facilities can help determine final design specifications.

7.2 Phase 2 Water works - SAPS engineered and built, septic and restroom relocation.
The first elements built for the site should be the SAP system, the new sand septic, and all other elements that directly impact water quality. This is job one. The engineering of the SAPS will directly determine issues of scale and grade for the site and, thus, need to precede other building.

7.3 Phase 3 Cement works - locate text, flushing pond, amphitheater development, benches.
All cement works on the site could be done at once to save time and money. After the SAP System is built, final determination can be made about the more discretionary aesthetic elements such as text in the site. The aluminum flushing pond can wait to be built at this time since it will not be needed until a quantity of aluminum has actually built up in the SAPS.

7.4 Phase 4 Depot development, platform, shelter house, and axis to other site.
The work on and around the depot can be done at a later date or concurrently as seems appropriate. This is especially desirable if the long railroad line axis to the other site is to be developed into an overall town plan. This gives time for the Ball Diamond site to begin to have an effect on the community and to judge how the axis and the relationship to the other park should evolve, locally and regionally.

III. Addenda

- **The Project:**

1. Arts and Appalachia Grant Application form
2. Grant request filed by MCRP
3. Topographical and Aerial view maps of site

- **The Process:**

4. Design Team Workshop Agendas
5. Community Goals
6. MCRP community Survey on AMD

- **SAPS:**

7. Conventional SAPS sizing for Ball field site.
8. Alternative Steel Slag SAP System specifications
9. Annual Flows from Murray City Ball field Seeps
10. Measuring Devices for Seeps

- **Soil and Plants for Site:**

11. Hocking County Native and Rare Plants
12. Chagrin Soil Makeup of Site and its Uses

- **Cultural Programming:**

13. "Exile, Homeland, and Negative Capability"
14. Ohio Arts Council Programs and Ohio Writing Project *
15. Nickname List for Murray City Residents

- **History:**

16. Old Maps and images from Murray City
17. Recommendations from Team Historian

- **Other technical Data:**

18. Slag Cement specifications
19. Large scale maps of area

- **C.V.s of Team Members:**

20. Mitchell E. Farley, Environmental Specialist **
21. J. Michael Steinmaus, MCRP **
22. Ivan Tribe, Historian **
23. Frances Whitehead, Artist
24. Michael R. Van Valkenburgh, Landscape Architect

- **C.V. of Project Intern:**

25. Sarah Endriss

* OAC Program guidelines obtained by FW and forwarded to MCRP
** Not received to date